THE INDIRECT ADVANTAGE OF TRAINING ON PRODUCTIVITY

by

Tiziana Carafa

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Abstract

According Human Capital (HC) theory, the investment in to the education/training should benefit a) the employee, by increasing his/her ability to command higher wages, and b) the employer, by increasing the organization's productivity. Research in HC theory generally supports the presence of a positive and direct effect of training on productivity. In this study, we considered the possibility that training might affect productivity in a less direct way. According to this indirect effect hypothesis, training might affect variables such as the turnover within a company, the level of absenteeism, and job satisfaction, which in turn might have positive or negative effects on productivity. The objective of this research was to ascertain both the direct and indirect effect of training on productivity.

To analyze this indirect effect, we adopted a two-step approach. The first step examined the effect of training on absenteeism, turnover, and job satisfaction; the second step examined the effect of training and the other three factors of interest on productivity. It was expected to observe in step one an effect of training on one, or more, of the three variables and then, in step two, an effect of these variables on productivity. In addition, we also expected to observe in step two a direct effect of training on productivity.

To analyze these effects, we used a linear regression approach using crosssectional and longitudinal analyses based on data from the Workplace and Employee Survey (WES) from 1999 to 2005. The results of the first set of analyses were partially consistent with the notion of an indirect effect of training on productivity. We found robust relationships between training and turnover and between training and job satisfaction in cross-sectional and longitudinal analyses. However, we found a very limited effect of training on absenteeism.

The results of the cross-sectional and longitudinal analyses performed in the second step did not confirm the hypothesis of an indirect effect of training on productivity, since none of the variables of interest: absenteeism, turnover, and job satisfaction, had any consistent effect on productivity. Additionally, no consistent direct effect of training on productivity was observed.

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1 Chapter: Introduction

1.1. Why Training is Important

For centuries, political theorists have underscored the importance of human capital investment. Both Adam Smith and John Stuart Mill recognized that differing opportunities for education and training allowed certain workers to compete more effectively in the labor market (Mallier and Shafto, 1989). Researchers have traditionally paid more attention to education than to training; only recently have they begun to investigate the topic of training.

This interest in training stems from the changes the economy has been undergoing. Globalization is putting pressure on the organization to constantly adapt to increasingly competitive markets. This new economy will require a dynamic workforce capable not only of adapting to, but also of fostering innovation. Gunderson and Riddell (1995) argued that to ensure Canada's long-term economic growth, the competitive advantage of high wage countries will lie in a "high productivity, high value-added work force" that can produce quality products and services at a competitive cost.

From the point of view of the individual worker, the new economy implies a need to continuously upgrade one's skills to remain competitive in the workforce. The years spent in education generates a form of capital with potentials to produce long-term returns similar to other forms of capital. Increasingly this view has become influential among policy makers, and expanding beyond formal education. From the perspective of the organization, the new economy implies the need to acquire and maintain an accomplished and skilled workforce. It therefore comes as no surprise that in a survey administered by COMPAS, nearly two third of the executives of Canada's top midcap companies identified the hiring of skilled employees as one of their major challenge. Employee training was a close second (COMPAS, 2005). The changing economic environment has also put pressure on governments to take a more active role in fostering training both nationally and internationally.

1.2. Training at the Forefront of Policy Discussions

In Canada, training issues have been at the forefront of policy discussions. Starting in the late 1990s the federal government began to examine the way training was delivered in Canada (Carafa, 2000). Historically, the federal and provincial governments have had shared responsibility for training. The involvement of the federal government in training policies stemmed from the Canadian Employment Insurance Act. This Act consists of two parts: Part 1 provides for income support for people temporarily out of work, and Part II involves active employment benefits to help the unemployed return to work, including labour market training. Provincial governments are also involved in training because of their constitutional responsibility for education. The problem is that this joint responsibility has often been a source of bickering between the two levels of government. Such disputes have often led to limited collaboration and duplication of programs.

In the mid 1990s, the Federal government began the process of transferring labour market training to the provinces. The withdrawal of the Government of Canada from labour market training programs was recognized as an extension of the education system, a provincial responsibility. The transfer of these agreements took place through the signing of the Labour Market Agreement (LMDAs), and by 2005 all provinces had signed LMDAs. These agreements allow the federal government to retain responsibility for EI benefits under EI Act Part 1 (i.e., the passive support measures), but provide for the transfer to the provinces and territories of Part II of the Act (i.e., the active support measures). The transfer to the province is aimed at better tailoring the training policies to the needs of the local economies, and to put in place active labour market measures that better help the unemployed Canadian integrate into the labour market.

In conjunction with implementing similar policy reforms, the Government of Canada has also fostered a culture of learning by promoting a national human capital policy. Productivity has been lagging in Canada and the Government has been trying to address this issue. In 2004, the Liberal Government issued the Innovation Agenda, which consisted of two reports 'Knowledge Matters: Skills and Learning for Canadians', and 'Achieving Excellence: Investing in People, Knowledge and Opportunity'. The former invites all sectors of society to work together in order to ensure Canadians have the tools they need to participate in Canada's workplace. It underscores the importance of creating a well-educated workforce from elementary to post-secondary education for all Canadians. An increasingly skilled workforce is required not only to come up with new and innovative ideas, but to have also the skills in order to implement any new and/or innovative idea (Conference Board of Canada, 2009, 2011). Education and training

systems must rise to the challenge by providing people with the means to learn and retrain throughout their life. In Advantage Canada (2006) which set the agenda for Canada's current government, the Conservative government reiterated its commitment to training and education as critical components for Canada's continued prosperity.

This interest in training is not limited to Canada. At the international level, the Organization for Economic Co-operation and Development (OECD) and the World Bank periodically produce reports underscoring the importance of human capital investment. These organizations also engage in activities that promote such investments (OECD, 2000, 2004, 2007; World Bank, 2010) Developing countries and international organizations look to human capital investment as a means of reducing poverty and income inequality (World Bank, 2011). According to Keeley (2007), the importance of a skilled workforce is also illustrated by the experiences of countries like Germany and the United States, where the advent of mass education, around the end of the 19th century, spurred directly large-scale economic growth. More recently, Asia's "tiger economies, such as Singapore and Korea, experienced increasing levels of literacy before their momentous growth in the 1980s and early 1990s.

1.3. Evidence-Based Policy

This interest in training has generated a demand for a better understanding of the effects of training. Training is an investment in human capital. It entails the allocation of resources by a variety of actors: the employer, the employee, and the state, with the expectation of reaping future benefits. For policy makers, education and training are

central policy prescriptions to ensure a country's prosperity. A better understanding of the effects of training is therefore essential not only for private organizations, but also for government and policy makers who have to allocate public resources to foster training.

As governments are under increasing pressure to show greater accountability. efficiency and effectiveness in the administration of policy programs, the need to assess regularly the performance of programs becomes even more compelling. To create the best conditions for growth in the knowledge-based economy, governments need to finetune their policies on education, training, labour adjustment, industrial relations and industry development. Hence, policy/program assessment is necessary in order to make changes and achieve progress in these areas. Both nationally and internationally, steps have been taken to foster more empirical research in education and training. OECD's Center for Educational Research and Innovation (CERI), starting in the 1990s launched the series of "What Works in Innovation in Education" The primary objective of CERI's initiative is to stimulate empirical research aimed at explaining not only what works, but also why, how and under what circumstances. To date, the emphasis of these studies has not been on training, but has focused primarily on assessing and improving teaching and learning tools and/or developing tools for assessing current levels of skills (i.e., International Assessment of Adult Competencies). In an attempt to understand better the impact of training, the Canadian government is not only encouraging workplaces to more actively assess training but it has also put in place surveys to stimulate further research in this area.

In 2007, the federal government, through Human Resources and Skills Development Canada, provided funds to the Canadian Society for Training and Development (CSTD). The CSTD is a national, not-for-profit, membership association serving the field of workplace learning and performance. The funds were provided over a three-year period to conduct case studies on 12 Canadian firms to assess the value of investing in training (Gillis and Bailey, 2009, 2010).

The Workplace Employee Survey (WES) which is used in this study was designed by the federal government in 1999 with the intent of providing data for researchers to assess workplace practices. The WES allows us to examine the associations between different practices and characteristics of firms and workers over a number of years so as to determine what practices lead to what outcomes. As noted previously, in the last decade the interest in training has increased. This increasing interest is reflected in WES. Indeed, different aspects of training are considered in both the workplace and employee surveys.

The sample for the workplaces comes from the Business Registry of Statistics Canada that contains information on all business locations operating in Canada that have paid employees in March. It does not contain employers operating in Yukon, Nunavut and North West Territories. Employers operating in crop production and annual production; fishing, hunting and trapping; private households, religious and public administration are not included. The employees are then selected from within the sampled workplaces. Given the extensive nature of the survey, it would be very difficult to replicate without incurring excessive costs.

1.4. Objective of the Study

The rationale for training is to improve the skill set of workers. It is assumed that training has a direct effect on productivity as a result of the newly acquired skills. However, training could affect productivity in other ways, not necessarily linked to the skill acquisition. In other words, training could have a direct and indirect effect on productivity. There are some indications that suggest the presence of an indirect effect. Specifically, training might affect variables such as the turnover within a company, the level of absenteeism, and job satisfaction. In turn, these variables could have positive or negative effects on productivity¹. These relations are summarized in Figure 1.1.

The objective of this research was to ascertain whether training has a direct and indirect effect on productivity. To investigate the presence of this direct and indirect effect, we used a two-step approach. In the first step, we investigated the relationships between training and three variables of interest: turnover, absenteeism and job satisfaction that might affect productivity. In the second step, we measured the effect of all these three variables on productivity. The indirect effect hypothesis would predict first an effect of training on level absenteeism, turnover, and job satisfaction; next the hypothesis would predict an effect of all four variables: training, absenteeism, turnover, and job satisfaction, on productivity. The effect of training would demonstrate its direct relationship to productivity possibly via the newly acquired skills; the effects of

¹ The indirect effect is clearly the results of two direct effects. The first is direct effect of training on turnover, absenteeism, and job satisfaction. The second is the direct effect of these factors on productivity. Nonetheless, in this work we used the term 'indirect' to describe the ensemble of these relations because it makes more intuitive, and therefore clearer, the distinction between the two causal relations we are really interested in: the effect of training alone on productivity (i.e., the direct effect) and the effect of training on productivity via the three intervening factors (i.e., the indirect effect).

absenteeism, turnover, and job satisfaction, on productivity would be consistent with the notion of an indirect effect of training on productivity mediated by those variables.

We used the data from the Statistics Canada Workplace Employee Survey (WES), which have been collected across several years. The primary advantage of using WES is that we are able to exploit a rich data set from a nationally representative survey of Canadian establishments. The WES data were used to analyze the relationship between these variables using both a cross-sectional and a longitudinal analysis. In the latter case we used differences between pairs of years.



Figure 1.1 - The Indirect Advantage of Training on Productivity

2 Chapter: Theoretical Framework: Human Capital Theory

2.1 The Basic Tenets of the Human Capital Theory

The renewed emphasis on training has rekindled an interest in the Human Capital (HC) theory, which was first introduced in the 1960s with the work of Gary Becker (1962), Jacob Mincer (1962) and Theodore Schultz (1962). At the core of the HC theory there is the notion that skills are acquired or improved in order to increase productivity. Skills might be acquired through formal schooling, (i.e., formal education) or training programs. Both education and training can be considered an investment in the human capital; like any other investment, this involves incurring costs in the present to obtain future benefits. In this respect, the HC theory deals with the fundamental question of whether this investment is economically worthwhile for either the individual or the organization.

The HC theory has investigated the role of formal education, e.g. to address the issue of whether different levels of formal education afford different rates of return in the form of higher wages. However, in our research we will consider only the HC account of training, which is the acquisition or improvement of skills once the worker is already working.

By affording the worker new skills, training raises the worker's productivity but it might also increase his/her value in the labour market. In correspondence to these benefits, there are direct and indirect costs. The direct costs refer to the actual costs of acquiring the skills, such as tuition/training outlays, trainers' salaries, and so on; whereas the indirect costs refer to the income/output foregone while acquiring the training. Therefore, from a theoretical perspective, the decision for the trainees or the employer to invest in training is also determined by a cost benefit analysis.

2.2 General and Specific Training

With respect to training, an important distinction within the HC theory is that between general and specific training (Becker, 1962; Mincer, 1962). General training refers to the acquisition of general skills; that is, skills that can be used in more than one organization (e.g. a plumber in a renovation company). General training will increase the marginal productivity of the worker receiving that training. However, this increase would be equally useful to other organizations as well. In other words, other companies could also benefit, in terms of productivity, from the increased skills of the trainee. According to the proponents of the HC theory, in a competitive market firms will bid for the trainee's newly acquired skills by offering higher wages equal to the value of the training. Thus, an employer who invests in general training runs the risk of losing the employee to another employer willing to offer wages that are more competitive. This is commonly referred to as the free-rider and/or poaching phenomena. Under these competitive conditions, the wage of the trained worker might eventually increase by the same amount as the increase in productivity. It is easy to see that the employer would gain from the general training only if a) the increase in wage is lower than the increase in productivity or b) the trainee incurs the cost of the training.

Specific training, on the other hand, refers to the acquisition of skills that can be used only in the employer's organization (e.g. paving roads in a region where there is only a single construction company). Specific training increases primarily the productivity of the organization, and is not easily transferable to other organizations. Thus, the rewards for acquiring the additional skills accrue primarily on the organization and not on the trainee. The trainee having learned this organization's specific skills can now perform his/her task more efficiently. However, having acquired these new skills does not put the trainee in any better position to obtain a higher-paid job with another employer unless the prospective employer also requires that specific set of skills. Since there is no competitive demand for the skill, wages need not rise after the training. As a result, according to the HC theory, when the training is specific, wages will rise more slowly than the marginal productivity gain. In this case, the employer would gain from the specific training much more than the trainee. Accordingly, the employer should incur the costs for specific training.

The distinction between general and specific training might be difficult to make in practice; nonetheless, it does have some theoretical value. The distinction was introduced to account for the phenomenon of turnover, which will be examined in more details in Chapter 4. Turnover refers to the rate at which employees change organizations. General training creates the conditions that favor an increase in turnover. This is because the newly acquired general skills provide the employee with a competitive advantage in the labour market; thus, he/she could find more convenient to move to another company. On the contrary, specific training would not provide the employee with the same competitive

advantage and it should result in fewer turnovers. Becker (1975:32) summarized the effect of general and specific training on turnover as follows:

Employees with specific training have less incentive to quit, and firms have less incentive to fire them, than employees with no training or general training, which implies that quit and layoff rates are inversely related to the amount of specific training. Turnover should be least for employees with extremely specific and most for those receiving such general training that productivity is raised less in the firms providing the training than elsewhere...

2.3. Earnings growth and productivity growth

The preceding section underscored that the positive effect of training on productivity is associated with a comparable effect on wages. More generally, the HC theory contends that earnings should reflect the level of skills, obtained through education or training, as well as the work experience. Earnings grow with experience because work experience enhances productivity (Mincer, 1974). Earnings growth increases up to a certain age. The combined effects of education, job training, and work experience contribute to the age-earning profile, which has a well-known concave shape. This concave shape reflects two key factors (Gunderson and Riddell, 1993: 453-460): individuals with more years of education generally earn more than those with fewer years of education; and individuals generally continue to add skills, through training and work experience, once on the job. However, the training investment that takes place at a later age may not pay off as there is a shorter period to recoup the benefits in terms of higher wages and productivity.

Earnings growth might not reflect the actual productivity growth. That is, earning growth might arise because of other institutional arrangements that may appear to be non-productivity related. Examples of this include seniority provisions under collective agreements in either private or public organizations. The proponents of HC theory would argue that "…such practices, however, do not contradict the productivity-augmenting hypothesis, unless it can be shown that growth in earnings under seniority provisions is largely independent of productivity growth" (Mincer, 1974:80). These factors of institutional arrangements were never fully explored by the human capital theory, but could have applied to both private and public organizations.

2.4. The Indirect Effect of Training

The HC theory provides a clear framework for analyzing the relations between skills, earning and productivity. However, this framework might not fully capture the complexity of these relations. For example, the relationship between skills and productivity may not be so straightforward. Some authors argued that job performance, and hence productivity, is affected not only by the ability to perform the duties/tasks, but also by the attitudes towards the job (Vroom, 64; Gibson, Ivancevich and Donnelly, 1994). Medoff and Abraham (1980) investigated the relation between education, earning and job performance in managers and professional employees of two American firms. In agreement with the HC theory, the authors found that people with more formal education and tenure were earning more; however, and in contrast with the HC theory, they also found no link between earnings and performance. The authors speculated that both skill obsolescence and boredom might have been responsible for the decrease in productivity over time. Kaufman (1974) also found that lack of stimulation, and therefore the motivation to work, affected the performance of engineers in their job.

These studies express what a common sense observation is: if employees are unmotivated to work, they might not reach their full potential. As noted in Chapter 1, the competitiveness, and hence the long-term economic growth, of Canadian organizations will depend on their ability to acquire a "high productivity, high value-added work force". This means a skilled workforce operating at its full potential. Not surprisingly, increasingly more organizations are paying attention to the needs of their employees. These organizations are involved in implementing human resources policies/practices aimed at fostering a positive working environment that can meet these needs. To some extent, the implementation of training development policies could have been part of this effort. Thus, fostering a culture of learning could increase not only the skill set of the workforce, but also its commitment to the organization. Or quite the contrary, training may not suffice as a tool to motivate a workforce that is already highly educated. These new developments might have important implications for the HC theory. They open the possibility that the positive contribution of training programs might not be limited to the pure acquisition of new skills, but could extend to other, more general, effects on the organization.

In addition to the direct effect of training on productivity, this research investigated three factors: turnover, absenteeism and job satisfaction, through which training might contribute, albeit indirectly, to the overall productivity of the organization.

3 Chapter: Training and Turnover, Absenteeism, and Job Satisfaction

In this chapter, we provide an overview of the research performed on the relations between training and the three variables of interest: turnover, absenteeism, and job satisfaction, which could be at the basis of the indirect effect of training on productivity.

3.1. Training and Turnover

Turnover refers to the rate at which employees/workers change organizations. Employees might leave an organization for both job and non-job related reasons. High rates of turnover can be costly for the organization as there are expenses associated with replacing the employee. If the departing employee had also been trained, there is the additional loss of investment in the training. As such, the fear of losing trained workers may lead to less investment in training than is desirable in a competitive market.

As noted in the preceding chapter, the relationship between training and turnover was one of the main contributions of the Human Capital (HC) theory. The HC proponents argued that the rate of turnover depended on the type of training. Turnover should be higher for general training than for specific training. The study of this relation has not been easy, however.

First, the distinction between general and specific training rarely holds in practice. Most training programs contain a mixture of specific and general training. In part, this reflects the need of the organization to have a workforce that has both types of training in
order to be competitive. In addition, the nature of the skill might change over time. Computer training, for example, may have been initially considered as specific training. In some cases, such as learning a specific software package, this might still be the case. However, today many jobs require the use of a computer. Hence, learning how to use a computer, independently of particular software, can be seen as a form of general training. What matters is the nature of the training and how easily it can be transferred to other organizations. Some authors have adopted the general and specific distinction. Others recognizing the difficulty described above have classified training differently.

Krueger and Rouse (1998) investigated the relationship between training and turnover for low skilled workers in two mid-sized American companies, one in service and the other in manufacturing. The training provided general skills such as writing, math as well as specific skills, such as blueprint reading that could not be easily transferable to other jobs. The courses were subsidized by an 18 month grant from the federal Education Department which was part of the federal Education department's attempt to improve workplace literacy for the employer's low skilled workers. The training ran from the end of October 1992 through February 1994. The courses were held on-site and students met twice a week for two hours. The workers voluntarily signed up for the training; however, they could only sign up if their absences did not disrupt the flow of work, as classes met during the regular shifts. The data were obtained from the company's administrative records, and supplemented with survey data that the researchers collected from the employees. The survey elicited qualitative data such as their attitudes towards their job and job performance. The researchers collected both pre and post training data.

To evaluate the effect of training on turnover, the authors used a probit model to estimate the probability of leaving the organization for employees who had received classroom training and those who had not. To this purpose, they defined as "having left the company" those workers that were no longer on payroll one or two years after the training, i.e., from February 1994 to March 1995, for reasons other than a discharge². The result of their analysis indicated that in the manufacturing company, employees who participated in the training were 5% less likely to have ever left the company than those who did not participate. In the service company, the percentage was 7.7% (Krueger and Rouse, 1998: 78-79). In other words, having received the training increased the probability of remaining in the company. Notably the differences were not significant. According to HC theory, these results are expected when the "specific" elements of training prevails. This might have been the case because the training involved the ability to read blueprints typical of that industry. However, some other factors might have explained the results. Krueger & Rouse noted that the participants in the study were less likely to be laid off or discharged; hence, suggesting that the employer valued these trained employees more highly. Thus, the tendency to remain in the organization following training could be determined by the will of the employer rather than that of the employee.

Bishop (1991) used data from the Employment Opportunity Pilot Project Survey of Firms to examine the impact of training on turnover. The survey was administered between February and June 1982 to about 3,400 firms concentrated in South and Midwest

 $^{^2}$ The authors noted that the count was somewhat more complex for the manufacturing company because a high proportion of those who had been laid off in 1994 were back in March 1995.

of the United States. The survey provided information about formal and informal training. Bishop assumed that formal training might be more related to general training, whereas informal training was more related to specific training. Bishop found that turnover was higher for the formal than the informal. These results suggest that formal training, to the extent to which it provides more general skills, contributes to turnover. However, Bishop noted that the effect of formal training might also be because this type of training can be more easily recognized by other organizations.

Leckie et al. (2001) examined the effect of training on turnover by considering the propensity of an organization to invest in training. They used the 1999 WES survey to investigate whether organizations, which were more likely to invest in training, had higher turnover. The authors provided only a descriptive analysis of the data. However, their results showed that while training increases the possibility of turnover, this relationship is not simple. The authors found a very low training rate (31%) among establishments with zero turnover over the last year, a very high training rate (77%) among employers with low to medium turnover, and a somewhat lower training rate (68%) for establishments with a relatively high turnover. Note that the authors did not clarify what they considered medium to high turnover. Nonetheless, their study suggests that training leads to some turnover, although the relationship is a complex one. The authors acknowledged that their results were preliminary since they were limited to only one survey year.

Most recent studies also raise some concerns about the validity of the HC account of the relation between training and turnover. Flaherty (2007) found that tuition reimbursement programs, which are generally linked to the acquisition of general skills, actually increase employee retention. The author argued that the findings could still be accounted for by the HC theory by assuming that the investment in general human capital is used to complement investments in firm-specific human capital. Koster, De Grip and Fouarge (2009) also found that employer-sponsored general training does not increase the intention to quit, as predicted by HC theory. However, these authors attributed these results to motivational factors; specifically employer-sponsored general training fosters a favorable perception of the commitment of the organization to employee development. This might, in turn, lead to a perception of opportunity for career growth, thereby reducing the intention to quit the organization.

In our study, we investigated the relationship between training and turnover using the data from the WES surveys. In addition to training expenditure, which was also used by Leckie et al. (2001), we considered several other measures of training available in the WES. These included different types of training, such as the employer-sponsored classroom training, employer-sponsored on-the-job training. The rationale for this decision was that training expenditures, as an index of the amount of training provided, do not provide information on the effect of the type of training. The latter could be important because, as shown by Bishop (1991), turnover incidence might vary depending on the type of training (formal vs. informal).

The relationship between training and turnover might also be affected by the employee's perception of the relevance of the training itself vis-a vis the requirements and demands of the job. It is reasonable to expect that workers leave the organization to turn their new skills into pay raises; however, it is also plausible to expect that some workers go away because training is not being provided to meet the demands of the job. The notion that training might not be sufficient for the demands of the job from the perspective of the employee has not received much attention. We included two training measures based upon the employee perspective regarding the adequacy of training; these were obtained from the Employee survey portion of the WES.

3.2 Training and Absenteeism

Krueger and Rouse (1998) also addressed the relationship between training and absenteeism. With respect to absenteeism, the representatives of the manufacturing company had pointed out that absenteeism and tardiness were common employee problems. The organizers of the training program had hypothesized that workers would have more likely come to work when they had class. To test the hypothesis, Krueger and Rouse measured job absenteeism in the manufacturing company as the number of hours that an employee was absent from work, and for which he/she was not paid, each week. Unpaid time also included tardiness. The authors were therefore considering unpaid leave. Their results showed that for each hour of class there was a reduction in unpaid absenteeism of .09 hours (5 minutes).

In the case of the service company, absenteeism was calculated as the fraction of the regular workweek that the individual did not work. The results for the service company were similar to those in the manufacturing company. An additional hour of training resulted in a reduction of unpaid absenteeism of .15 hours. The researchers also noted that workers had lower rates of absenteeism during the weeks they had classes and for at least two months afterward. The evidence suggests that training might reduce absenteeism, although the effect is clearly small. However, as noted by the authors, it is possible that in the long run the effect of training on absenteeism may fade away. A better assessment may require measuring the impact of training on absenteeism over a longer period of time, e.g., one year or more. The dataset used in our study allowed us to examine absenteeism over a number of years using both a cross sectional and longitudinal analysis.

Böckerman et al. (2009) used data from the 2008 Finnish Quality of Work Life Survey to examine the relation between innovative work practices, which included selfmanaged teams, information sharing, incentive pay and employer-sponsored training, on the prevalence of short- and long-term sick leaves. Surprisingly, they found that innovative work practices, and in particular training, were associated with an increase in short-term sick leaves for blue-collar and lower white-collar employees.

For the Canadian context, some evidence of the relation between training and absenteeism came from a study conducted by Dionne and Dostie (2005). These authors used the WES survey (1999 - 2002) data to investigate the determinants of absenteeism. They focused on certain features in the organization, including the incidence of training.

To measure absenteeism, the investigators used total number of leaves, including paid sick leaves, other paid leaves and unpaid leaves, Furthermore, they controlled for demographic worker information, job and firm characteristics. With respect to training, they included three variables (i.e., industry certified training; other training and having received training in the past year). They found that there was no significant relationship between absenteeism and the first two measures of training. On the contrary, there was a significant negative relationship between the incidence of absenteeism and training received in the past year (Dionne & Dostie, 2005:30).

3.3 Training and Job Satisfaction

The evidence linking training to job satisfaction is rather limited and conflicting. In their work on the effect of training, Krueger and Rouse (1998) briefly considered, in addition to turnover and absenteeism, also job satisfaction. They found trainees and nontrainees did not differ in the level of satisfaction with the organization. In contrast to Krueger and Rouse, Leckie et al. (2001) found that training could positively affect job satisfaction. These authors using the first 1999 WES set of data from both the employer and employee surveys found that:

- The percentage of employees who were satisfied with their jobs was greater among those who participated in employer-sponsored workplace training as compared to those who did not;
- Employees who reported that the training they received was about right for the demands of their job were more likely to be very satisfied than those who said that the training was too little or too much for the demands of their jobs; and
- Employees in establishments where the amount of training made available to them had increased over the last year were more likely to be very satisfied than those in establishments where training had decreased or had remained stable.

Similar findings have recently been reported by Haile (2009). The author examined the determinants of job satisfaction in Britain using data from the 2004 British Workplace Employment Relations Survey (WERS). One of the most significant determinants of job satisfaction was the presence of a mismatch between the skills demanded by the job and the worker's skills: Workers in jobs that required higher or lower levels of skills than the skills they possessed were less likely to be satisfied with their work.

The importance of satisfaction towards training was also noted by Schmidt (2007) who found that the satisfaction with workplace training is an important component of overall satisfaction. In examining job satisfaction, one needs to also distinguish between overall satisfaction from other aspects of satisfaction. An individual may have satisfaction with many economic facets of his/her job (e.g., pay), but still feel overall job dissatisfaction. In line with this distinction, the WES has two measures of job satisfaction: one provides us with a global attitude and one is related to the facet measures (such as pay) of job satisfaction that are provided by the job. We examined both.

4 Chapter: Training and Productivity

Productivity is important. From the employer perspective, increasing productivity can be a matter of survival in an increasingly competitive environment. The issue of productivity is also important for the country. Increases in productivity contribute to higher economic growth, higher standards of living and higher real incomes (Harchaoui and Tarkhani, 2005). Following Harchaoui and Tarkhani, productivity can be increased by building capital; improving production processes; adopting new technologies and improving workers skills.

It is easy to see that all of the above factors could contribute to improving the output of labor, i.e. labor productivity. In economic terms, labor productivity is typically measured as output per worker or output per labour-hour (Bruce 2002). If a worker is provided with better tools and equipment, he/she should be able to produce more output (being it a good or a service). Similarly, if the worker undergoes a training program to upgrade his/her skills, the labor productivity should increase. In the rest of this chapter, we review and discuss the literature on the contribution of training to labor productivity.

4.1. Measures of Productivity

Overall, studies have shown that training positively affects productivity. However, the examination of this relationship has not been an easy one, mostly because of the difficulty of measuring productivity. Researchers have measured productivity either at an individual level, which is the performance of individual workers, or at the organizational level, that is the performance of the organization as a whole.

Productivity has been calculated using subjective and/or objective measures. At the individual level, the productivity of a worker has been measured subjectively using performance appraisals prepared by immediate supervisors. Objective measures, instead, have included measures such as the time required to perform a task, or the number of non-defective unit completed in a unit of time. At the organizational level, subjective measures of the productivity of the organization as a whole have been obtained by subjective assessment given by management. In contrast, objective measures have been obtained through the financial figures of the organizations.

4.2. Training and Productivity

4.2.1 Training and Productivity at the Individual Level

Holzer et al. (1993) used an objective measure at the individual level to examine the effect of training on productivity. They administered a survey to manufacturing firms that had applied for training grants under the Michigan Job Opportunities Bank upgrade in 1988 and 1989. Productivity was measured by scrap rate (i.e., the percentage of output from a process that fails inspection and cannot be reworked.). The authors controlled for variables that could affect training levels: union status; assistance from the Michigan Modernization Service, sales, employment, and wage levels in the previous year, stated reasons for training. Holzer et al. (1993) estimated the impact of hours of training on scrap rate. They noted that firms providing more training resulted in higher quality work; that is, they found that the doubling of worker's training reduced scrap rate by 7%.

Similar positive results were also obtained in an experimental study at Garrett Engine, a manufacturer of jet engines Pine and Tingley (1993). The company was concerned about the total downtime (i.e., time when a machine is not being used because the equipment needs repair) of its equipment, which also included the job response time (i.e., the time it takes for a team to respond to a call service) and the job completion time (i.e., the time required to complete a job). In order to improve the total downtime, the organization decided to use a 2-day team-building training program for the maintenance teams that repaired the equipment. Workers were randomly assigned to an experimental group and a control group. Prior to the training, the teams were pre-tested and it was found that the experimental group was slower to respond to the job requests and/or to complete the job. After the program, the downtime of the experimental group improved from 18.4 to 15.8 hours, whereas the control group's down time stayed about the same at 16 hours.

Bishop (1991) used a subjective measure of productivity from the Employment Opportunity Pilot Project Survey of Firms to examine increases in the productivity of newly hired employees who participated in employer sponsored training programs. The survey was administered between February and June 1982 to about 3400 firms concentrated in South and Midwest of the United States. One goal of the survey was a better understanding of the low wage labor market; hence, the sample consisted primarily of establishments in industries with a relatively high proportion of low-wage workers. Productivity was measured subjectively by a question in the survey in which employers rated their employees' productivity. Employers assessed the productivity of newly hired individuals after 2 weeks, 11 weeks, and 2 years at the firm. Worker productivity was rated from zero to 100, where 100 equaled the maximum productivity that an employee could get.

In determining the impact of training on productivity, Bishop considered the type of training (e.g., formal and informal), as well as who provided the training (e.g., supervisor, co-worker), and he controlled for both firm (e.g. size) and individual characteristics (e.g. professional category). Overall, the results showed a positive effect of training on productivity, although the size of the effect varied with the statistical model (log or linear) used for the analysis. An increase in informal training from 0 to 100 hours raised productivity of typical employees by 13-15% in the logarithmic model and 5.3-7.7% in the linear model (Bishop, 1991: 90).

Bishop noted that subjective measures could not be considered absolute in the sense that it cannot be guaranteed that all employers used the same criteria in assessing productivity. Nollen and Gaertner (1991) showed that subjective measures of productivity taken at the individual level, such as performance appraisal, present additional problems related to the characteristic of the work setting. Nollen and Gaertner (1991) assumed that the relationship between training (on-the-job and classroom), performance and attitudes is not constant across all work settings. To this purpose, they compared factory workers to office workers. The authors used field research data: interviews, focus groups, surveys, and company personnel files, obtained in 1987 in one plant of a Fortune 100 diversified manufacturing firm.

Productivity was measured subjectively using performance appraisals by immediate supervisors. For the factory workers, the appraisals included output measures (e.g., quality and quantity), behavior measures (e.g. absences, housekeeping) and attribute measures (e.g., cooperation, job knowledge). For office employees, the appraisals included descriptions of behavior, including planning, leading, controlling and organizing. Attitudes toward work, defined as willingness to work hard, was measured by a survey administered to employees. The statistical analysis, regression, was conducted separately for factory and office employees.

Overall, the results showed a positive relationship between training and productivity. This relation, however, varied with the type of training and one's attitude towards work. More importantly, the results differed for factory and office workers.

In the factory work setting, the relationship between on-the-job-training and productivity was very positive. Those who reported having received on-the-job-training during the two years before their most recent performance appraisals had appraisal scores that were higher than workers without on-the-job-training (Nollen and Gaertner, 1991: 446-447). However, the relationship between classroom training and productivity was negative. The opposite result was observed for office workers, classroom training had an effect, but on-the-job training did not. Another interesting result was that the attitude about willingness to work made significant contribution to productivity for office workers but not for factory workers. It is possible, as noted by the authors, that the use of performance appraisals in an office setting are more subjective than for factory employees. In the office setting, getting the work done depends more on the ability for supervisor and employee to work together; as such, employees attitudes towards their

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supervisors are likely to be related to supervisors' appraisals of employees. Additionally in the office setting, positive attitudes about work can affect the results, as attitudes towards the job influence people's behavior, which in turn can impact performance. In the factory, there is minimum scope for variations in willingness to work hard to affect output. While objective measures such as scrap rate and downtime afford a clearer measure of productivity than subjective measures, they are more difficult to obtain. Subjective measures, on the other hand, may be easier to obtain, but less accurate. In addition, both subjective and objective measure at the individual level often requires accessing additional information about the individual workers in the study. One way to overcome these problems is to examine performance at the organizational level, rather than at the individual level.

4.2.2. Training and Productivity at the Organizational Level

Researchers have also-investigated the relation between training and productivity using measures taken at the organizational level. In this approach, productivity is defined as the productivity of the organization itself, not of any specific individual worker. This approach attempts to confirm and complement the results obtained with individual measures of productivity.

One of the first researchers to examine the impact of training on labor productivity at the organizational level was Bartel (1994). In her study, she used the 1983 and 1986 Columbia Business School Surveys that covered a large sample of organizations in the manufacturing sector. The effect of formal training programs implemented by these organizations in the three years spanned by the two surveys was related to an objective measure of productivity. The incidence of training was defined at the organizational level as the "percentage of the firm's occupational groups for which a formal training program existed". The organization's productivity was defined as valueadded per worker, and it was calculated by dividing the net sales amount, adjusted for the cost of materials, by the number of employees/workers. Bartel examined the relationship between productivity and training within the framework of a non-linear productivity equation (i.e., power function) based on the Cobb-Douglas function. The function requires information regarding amount of labor and capital investments since it assumes that productivity is a power function of capital and labor.

Several control variables were also included in the analysis, such as unionization, age of company, personnel practices. The major finding of this study was that businesses which were operating below their expected labor productivity levels in 1983 and then implemented new employee training programs after that date, experienced a significant increase in labor productivity growth between 1983 and 1986. This higher rate of productivity growth was sufficient to bring these businesses up to the labor productivity levels of comparable businesses by 1986.

Turcotte and Rennison (2004) used the 1999 Workplace and Employee Survey (WES) data to investigate several questions related to the use of technologies in Canadian firms. One of the research questions was whether the productivity benefits are greater when the use of technology is combined with investment in human capital such as education and training. They controlled for both organizational (such as outward oriented firm, i.e., sells a larger share of products/services to the international market) and individual characteristics. In past studies, the relationship between technology use and productivity at the firm level in Canada had been limited to the manufacturing sector. These studies had also not accounted for the role of technology in productivity. Given the more extensive nature of WES data, Turcotte and Rennison were able to include in their analysis both the manufacturing and non-manufacturing (e.g., service) sector. The inclusion of the service sector was important as this sector accounted for over 80% of Information and communications technologies (ICT) investment in Canada over the 1989-2000 periods. Boothby et al. (2010) also underscored the importance of training for the effective use of technology for improving productivity.

The training measure used in Turcotte and Rennison's study was the percentage of employees that took computer training that is sponsored by the employer. Technological use was measured as the share of employees at the workplace using computers as part of their normal working duties. These authors used value added per worker to measure the productivity of the organization. Value added was measured as gross revenues minus expenses on material. Expenses on material are equal to gross operating expenditures less payroll and expenses on non-wage benefits and training. As in Bartel, they examined the effect of training and productivity using a Cobb-Douglas function which includes capital and labor inputs. Since capital information is not available in the WES, the authors, albeit recognizing that it was an imperfect measure, utilized information on capital based on industry level data (i.e., average level of capital per location in the industry) obtained from a different survey.

Consistent with past findings (Black and Lynch, 1996), computer training was found to be a highly significant determinant of firm productivity. The results showed that a 10-percentage point increase in the share of workers receiving computer training is associated with 4.5 % higher productivity. Importantly, it was also found that the impact on productivity from computer skills training was driven by the non-manufacturing sector. Indeed, no similar significant relationship was found in the manufacturing sector.

Leckie et al. (2001) also used the 1999 WES survey to examine whether those organizations, which were more likely to invest in training, were more productive. Contrary to Turcotte and Rennison (2004), these authors used a subjective measure of productivity reported in the employer survey portion of the WES. In this measure, employers were asked to rate their workplace performance in terms of productivity, sales, and profitability. The results showed that those organizations which provided more training, also reported to be more productive. They found that 46% of establishments that sponsored training also reported increases in productivity in 1998-99.

The effectiveness of training programs on productivity may vary across companies. The Canadian Society for Training and Development (CSTD) measured the impact of training programs in 12 Canadian companies (Gillis and Bailey, 2010). Training was very effective for five companies whereas it was not for the remaining seven. In the latter case, the lack of positive results was attributed to several factors such as training not being aligned with the business; training program not properly designed; and training having limited impact on business outcomes. Gandelman and Santoro (2010) argued that training programs should include content which is reflective of the specific needs of the organization; furthermore, the success of these programs is highly dependent upon the commitment and involvement of top management (Aghazadeh, 2007).

In summary, the positive effect of training on productivity has been demonstrated both at the level of the individual worker and at the level of the organization. In the latter case, the organizational culture can play a significant role. We noticed that the type of training, such as formal and on-the-job-training, as well as firm and individual characteristics, could affect this relationship. In the proposed study, the relationship between training and productivity was examined using an objective measure of productivity based on value added per worker, which refers to the quantity of output produced by a given quantity of labor input.

As in past studies, we considered both formal and informal training. Measures of training included not only the quantity of training (formal & informal), but also the proportion of employees taking training (formal and informal) in an organization. In addition, we also considered measures of training that take into consideration the perspective of the employee that is if employee in the organization deem the amount of training provided is adequate for the demands of the job and if the amount of training available to the employee has increased.

Recall that some authors have examined the relationship between training and productivity within the context of a productivity function based on a non-linear Cobb-Douglas function which require knowledge of capital and labor inputs. Since the capital information is not available in the WES, and to the best of our knowledge was not possible to obtain for all survey years considered in this study, we adopted a simplified approach based on a linear function. Hence this study examined whether there was a linear relation between productivity and training either directly or indirectly via other variables (absenteeism, turnover and job satisfaction).

4.3. Determinants of Productivity Related to Indirect Variables

4.3.1. Turnover and Productivity

There is much research regarding the causes of turnover (due to for example poor pay, bad management), yet comparatively little research exists on the actual effects of turnover.

There are immediate costs associated with employee turnover, which could affect the productivity of the organization in a number of ways. First, if the organization had invested resources on the departing employee, that investment will not have the expected returns. Secondly, there are costs associated with replacing the employee, e.g. hiring a new one. Thirdly, the new employee will require an adjustment period. Finally, the organization will have to spend resources in training the new employee. Hence, the impact of turnover on productivity is assumed to exist because of the costs associated with turnover as well as the loss of employees' acquired knowledge and familiarity with the organization's products and processes. According to Osterman (1987), new employees are rarely as productive as long-tenured ones, since their human capital accumulations are much lower. This is because the accumulation of firm-specific human capital embodied in a workforce determines performance (Strober, 1990).

Research on the impact of turnover on the organization suggests that this relation may not be so straightforward. Perhaps one of the main reasons is that the true costs for an organization associated with employee departure cannot be determined without considering the employee performance. According to Jackofsky, performance and turnover are related in a curvilinear fashion in which " (i) very low performers are pushed out by the organization (ii) low but adequate performers who are allowed to remain on the job stay because of low ease of movement; and (iii) as performance increases, turnover increases because of increases in ease of movement" (Jackofsky, 1984: 79). While the exit of low performers may not necessarily be bad for the organization, turnover of high performance individuals is likely to impact organizational performance. Jackofsky noted that the desirability of movement can be influenced by the reward administration that is in place within an organization, such as promotions and pay growth. Williams and Livingstone's meta-analysis study confirm this view. The authors found that the negative relationship between performance and turnover was significantly stronger in organizations in which reward contingency was used as compared to those organizations that did not have such a system in place (Williams and Livingstone, 1997: 286-287).

McElroy et al. (2001) examined the impact of turnover and productivity in the United States using financial service company records of 3500 employees working in 31 geographically separated sales regions. Productivity reflected the sales volume produced per month by the average sales representative in each region. This information was obtained from company records, and the productivity measure was calculated by adding the total amount of loans funded per region per month divided by the number of sales employees in the region (2001: 1296).

The authors considered three types of turnover over a two-year period: involuntary (i.e., avoidable turnover such as dismissals), voluntary (i.e., people who voluntarily leave the organization) and reduction in workforce (i.e., downsizing). The authors hypothesized that involuntary turnover -- that is dismissals -- would be positively related to organizational performance. This is because if poor performers are replaced with better performers, organizational performance should be enhanced. In the case of voluntary turnover, the authors contended that it might not affect organizational performance significantly. The underlining reasons for voluntary turnover are not always clear, and may involve unexpected results. For example, entrance of new employees may entail infusion of new ideas. Voluntary turnover may also involve the departure of poor performers who anticipate a dismissal. With reduction in workforce on the other hand the authors envisioned a negative relationship with organizational performance. This is because with downsizing the employee is not replaced and the departing employees are assumed to have been performing. Contrary to their expectations, the correlation results suggested that all three types of turnover had undesirable consequences for organizational performance. Their findings also suggested that the effects might intensify over a 1-year lag time (2001:1297).

Shaw et al. (2005) also examined the impact of voluntary turnover on workforce performance outcomes in two intra-industry studies: a concrete pipe company and a trucking company. In the production worker study, the two measures of workforce performance used were labor hours per ton and accident rates. For the trucking company three measures of performance were used. The first was the amount of revenue generated by the driver, an out-of service percentage (i.e., violations of federal and state regulations) and the accident frequency ratio.

In both cases, the relationship between voluntary turnover and workforce performance outcome was consistently curvilinear. It was generally negative, but was attenuated as turnover rates rose. The authors described the results as an attenuated negative relationship. These results are in agreement with Price (1977), which had proposed that successively higher amounts of turnover would be found ultimately to produce, more often than not, successively lower amounts of effectiveness at a decreasing rate. When turnover is very high the organization is geared towards a continual workforce replacement, and increases in voluntary turnover beyond some point are minimally disruptive. When the workforce is being constantly replaced (for example, the turnover rate is 100 percent), marginal increases in voluntary turnover (such as to 110 percent), are proportionally less problematic in terms of productivity and safety than increases at lower average turnover rates (e.g., from 10 to 20 percent).

Hence, in agreement with the human capital theory quits deprive an organization of the skills and abilities necessary for high performance among the workforce. However, Shaw et al. (2005) also showed that beyond a certain point, increases in quit rates are not incrementally erosive. That is, since average firm-specific human capital returns diminish as voluntary turnover increases, the incremental effect of turnover on workforce performance is less severe.

4.3.2. Absenteeism and Productivity

Absenteeism, particularly when not anticipated, can potentially have negative consequences for an organization. It can constitute a source of irritation to employers and co-workers. Typically, the work performed by the absentee is either not done or, more likely, performed by a co-worker. As well, the absences of an employee can be bad for the morale of co-workers. A high degree of absenteeism may be an indication of low morale and little commitment towards the organization. More importantly, co-workers are generally less familiar with the work performed by others and, hence, they might perform that work less efficiently. The result translates into lost of output for the organization.

There are signs in the Canadian context that absenteeism is on the rise. Using data from the Labour Force Survey, which measured absenteeism as time lost due to: illness, disability, personal and family responsibilities, Akyyeampong (2006) found that between 1997 and 2004, overall absenteeism increased from 7.3 to 9.2 days per worker.

Moch and Fitzgibbons (1985) measured the impact of absenteeism on organizational efficiency in a manufacturing industry. They gathered data from company records in a medium-sized assembly and packaging plant in the United States. The company distinguished between unanticipated absences due to sickness and those due to other reasons (anticipated absences). Efficiency was measured using the number of pounds of each product rejected as waste for each week, which were kept in company records. The records used for the analysis spanned a two-year observation period. Moch and Fitzgibbons (1985) suspected that automation might also affect efficiency. To assess the impact of automation they gathered data for those products, which required higher levels of automation, and for those that did not, that is they required high levels of employee involvement. The authors found that absenteeism did not affect efficiency under all conditions. Rather, the results showed that absenteeism affected efficiency only when the absences were unanticipated and when production was not highly automated. Moch and Fitzgibbons' study is important for it provides some insights on the costs of absenteeism for the employer; however, the study was limited to one organization in the manufacturing sector.

The Libet et al. study (2001) on absenteeism and productivity provide further insight also for the service sector. These authors examined one-year (1998-1999) archival data to determine whether absenteeism is related to work productivity at a Veteran Affairs Medical Centre outpatient facility. The study was limited to 22 outpatients' clinicians that included R.N, MSW and PhD.

To derive a measure of absenteeism, the authors focused on two types of leave: sick leave and family care leave. These leaves accrued as a function of number of hours worked. Employees were entitled to take the leaves as they saw fit. Since preliminary analysis indicates that there was a tendency among certain employees to take Mondays and Fridays off, leaves taken in these days were also recorded separately.

Clinical worker's productivity was based on clinician self-report of clinical encounters. The authors chose to represent this variable by including a weighted workload variable; "directs" which represented the average number of hours spent in direct patient contact; and "uniques" which represented the total number of unique patients seen for any clinical reason. They examined the relationship between absenteeism and worker productivity by calculating the correlations between variables in these categories and the incidence of sick/family leave.

The findings provided only a partial confirmation of the relation between absenteeism and productivity. The results did not show a significant inverse correlation between the incidence of sick or family leave and any measure of worker's productivity, although there was a trend in that direction. However, the results did show a significant inverse relationship between the percentage of sick leave and family care leave taken on Mondays and Fridays and workers' productivity. They also noted that tenure with the organization was inversely related to absenteeism.

The authors noted that some of the correlations were small but in the expected direction. They speculated low statistical power might have obscured potentially significant effects.

The studies above showed that there might be a relationship between absenteeism and productivity as well as between training and absenteeism. In our study, we examined the existence of these relationships. The measures of training and productivity were those proposed in the previous chapters. With respect to the measure of absenteeism, we used paid, unpaid leave and other forms of paid leave. As the reader may recall from the preceding chapters, Dionne and Dostie (2005, 2007) as well as Krueger and Rouse (1998) examined the relation between training and absenteeism. Dionne and Dostie used WES data to examine the determinants of absenteeism by focusing on paid and unpaid leaves. The main assumption made by Dionne and Dostie is that leaves could constitute an inducement to absenteeism. The results provided by Krueger and Rouse (1998)³ had already shown that absenteeism could be a recurrent practice even when the leave is not paid. We examined unpaid leave, paid sick leave as well as other paid leave separately. We did this over a number of years. In so doing it allowed us to compare the results in terms of their relationships with training and productivity with the same group of employees as well as to extend on past studies. Our study considered three types of

³ Krueger and Rouse (1998) also addressed the relationship between training and absenteeism. As the reader might recall, they studied the effect of general training (reading, writing and math skills) in two mid-sized American companies, one in service and the other in manufacturing. The data were obtained from the company's administrative records, and supplemented with survey data.

absenteeism, paid leave (i.e., average day of paid sick in an organization); unpaid (i.e., average days of other paid leave such as education, bereavement) and unpaid leave (i.e., average days of other unpaid leave).

4.3.3. Job Satisfaction and Productivity

The interest in job satisfaction stems from the assumption that employee satisfaction could help lower costs through increased productivity and reduced absences, turnover (Cranny et al., 1992).

Job satisfaction might be affected by both economic and non-economic factors. For this reason, it has been argued that measures of job satisfaction related to economic rewards should be separated from overall satisfaction, as they are conceptually different. Overall, satisfaction is essentially the global attitude or feeling individuals have about their job as a whole.

Already in 1964, Vroom showed that job satisfaction and productivity are positively correlated. He reviewed about twenty studies and found a median correlation of about .14. Nearly twenty years after, Iaffaldano and Muchinsky (1985) conducted a similar meta-analysis of several studies. Their results were not very different from those obtained by Vroom. The meta-analysis by Iaffaldano and Muchinsky shows that the correlation between performance and satisfaction is about .17 with a variance of .016. The studies included in Iaffaldano and Muchinsky's analysis measured productivity using objective (i.e., output) or subjective measures (i.e., performance appraisal). On the contrary, the authors excluded from the analysis those studies that measured job performance based upon absence, turnover, or union grievances. These variables were excluded in an effort to preserve the clarity of interpretations regarding the satisfactionproductivity relation. Thus, the meta-analysis performed by Iaffaldano & Muchinsky shows that a satisfied employee/worker performs more or better. This point was reinforced by a meta-analysis conducted by Podsakoff & Williams (1986). They examined the results obtained through laboratory and field settings in an attempt to better understand the extent to which rewards are linked to performance. They reported that the average correlation was .27 in situations where rewards were contingent on performance, but only.17 when they were not⁴. The authors also note that little attention is paid to the effects that other types of reward have on the performance-satisfaction relationship. Training could be a form of reward as it not only allows the employee to perform his/her tasks better, but it could be an indication of the employee's skill.

In their study using WES data, Dionne and Dostie (2005) found an inverse relationship between job satisfaction and absenteeism. This result should not be surprising in light of the strong effect of job satisfaction on health. Using data from the 2002 Canadian Community Health Survey, Statistics Canada recently reported that while the majority of Canadians in 2002 were satisfied with their jobs, approximately 1 in 12, that is 1.3 million were not (Shields, 2006). The study found that workers who were dissatisfied with their job were more likely to rate their physical and mental health as fair or poor compared to those who were satisfied. In addition, the level of job satisfaction

⁴ The results by Pordsakof et al. contrast with the preliminary results found by Leckie et al. (2001: 36-37) which using WES data found that establishment offering variable pay as part of their compensation methods had higher turnover.

was found to be related to the number of disability days workers had taken in the past two weeks. For every 100 workers who were very satisfied with their jobs, 47 disability days were reported, but for every 100 workers who reported that they were not satisfied with their jobs, the figure was 129 disability days (Shields, 2006: 36). Shields's findings corroborated those of other researchers. Faragher et al. (2005) reviewed a large number of studies on the effect of job satisfaction. The results showed that an increase in job satisfaction is associated with improved health. Interestingly, job satisfaction was more strongly associated with mental/psychological problems than with physical complaints.

We have seen that the relation between job satisfaction and productivity has been verified in numerous studies; however, as seen in Chapter 3, the relation between training and job satisfaction is less clear. In our study, we examined both relationships using the same data set. For our measure of job satisfaction, we will use measures that account for both overall satisfaction as well as facet measures of job satisfaction.

4.4. Other Determinants of Productivity

In examining the relation between training and productivity, our analysis will also consider other variables, which have been identified in the literature as having an impact on productivity. These variables are technology, the outward nature of the organization, HR practices, unionization and age of the organizations.

Technology

Beginning in the 1960s, changes have taken place in the composition of investment in the Canadian economy. Investments have progressively shifted towards

information and communications technologies (ICT) overshadowing those associated with other forms of investments such as machinery, building structures, land (Baldwin and Gellatly, 2007). The desire to understand better the impact of technologies on Canadian firms led Statistics Canada to develop and administer technology surveys in the manufacturing sector. These surveys include the 1989 Survey of Manufacturing Technology; the 1993 Survey of Innovation and Advanced Technology; and the 1998 Survey of Advanced Technology in Canadian Manufacturing.

Baldwin et al. (1995) were among the first researchers to examine the relations between technology and business performance using data from 1989 Surveys of Manufacturing Technology (SMT) developed by Statistics Canada. The data from this survey was then linked to the Annual Survey of Manufacturers (ASM) for the period 1981 and 1989. ASM is a longitudinal file that contains economic performance data such as data on plants' sale, value added, wages and employment. To examine changes in relative labour productivity, the ratio of output per production worker for technology users and non-users was calculated. The establishments were divided into functional groups which included Design and Engineering; Fabrication and Assembly; Automated Materials Handling System; Inspection and Communications; Automatic Control Devices: Manufacturing Information Systems; and Integration and Control Devices. With the exception of the Fabrication and Assembly group, technology users enjoyed a significant labour productivity over non-users (Baldwin et al., 1995: 23-24). According to the researchers, the lower productivity rating for the Fabrication and Assembly group could be explained by the fact that this group had one of the lowest technology adoption rate.

Baldwin and Sabourin (2001) combined survey data on technology use from the 1998 Survey of Advanced Technology in Canadian Manufacturing (SATM) with longitudinal data on labor productivity from the Annual Survey of Manufacturers (ASM) for the period 1988 to 1997. They focused on technologies associated with the information and communications technology. The sample consisted of plants that used exclusively software technologies, exclusively hardware technologies, exclusively network technologies and those which used various technology combinations. The results of their regression analysis suggested that improvements in relative productivity were linked to use of network communications technologies and the simultaneous use of technologies from all three groups (hardware, software or communications). Those plants that used combined technology strategies experienced the largest gains in productivity.

The above studies focused on the manufacturing sector. Turcotte and Rennison (2004) expanded the scope of these studies by examining also the service sector. As noted in Section 3.3, their study focused on the intensity of technology within these firms and its impact on productivity. They found that computer use made the largest single contribution: a 10% increase in the share of workers using computers raised productivity by almost 4.5% (Turcotte and Rennison, 2004: 31). In this study, consistent with the definition used by Turcotte and Rennison, technology was measured as the proportion of employees using computers at work.

Firms with outward orientation

Economists have argued for centuries that productive industries are those exposed to competition in international markets (Adam Smith, David Ricardo, Balassa &

Samuelson). Competition is a key driver to productivity. This is because competition forces industries to seek ways to improve their efficiency and price, compared to those operating in closed markets. For example, by competing in international markets, firms are encouraged to improve the quality of their labor, their capital, their management and organizational structure, as well as to adopt best international practices.

Baldwin and Gu (2003) examined the relation between export market participation and productivity performance in the Canadian manufacturing sector using data from the Annual Surveys of Manufacturing (ASM) plants from 1974 to 1996. Labor productivity was defined as value-added per employee. There were limitations to the ASM for it did not contain information on capital stock and investment expenditures. To solve this issue, the authors used energy costs to proxy capital stock. The authors divided the firms in their sample into exporters and non-exporters. They noted that exporters were more productive than non-exporters, as well the productivity difference between exporters and non exporters widened over the period of interest, rising from 24% in 1974 to 90% in 1996 (Baldwin and Gu, 2003: 9).

The authors then examined whether export participation led to better productivity performance. Using a sample of continuing plants in the 1990-96 period, they compared the productivity growth differentials for three cases: (i) entrants vs. nonentrants; (ii) exiters vs. continuers; and (iii) exiters vs. nonparticipants. Their results showed that entrants to export markets had an average annual labor productivity growth of 5.2% points higher than that of the nonentrants (Baldwin and Gu, 2003: 14). In the second case, the comparison of the exiters vs. continuers showed that productivity growth was slower for those firms that exited export markets by about 5.6% per year (Baldwin and Gu,

2003: 15). Finally, the comparison between exiters vs. nonparticipants showed that the plants that exited export markets had slower productivity growth than nonparticipants. In sum, the results showed that those firms oriented towards export markets had higher productivity compared to those who were not.

Turcotte and Rennison (2004), using 1999 WES data that included both the manufacturing and service sectors, found that firms with an outward orientation approach towards trade (i.e., those organizations that sell a larger share of their sales to the international marketplace than to the national market place) exhibited higher productivity levels. They found that the productivity of a domestic owned location that was outward oriented was 40% higher than its inward-focused counterpart (Turcotte and Rennison (2004:28).

In this study, we also measured the outward orientation nature of the organization as the percentage of total sales from all products and services to USA market and the rest of the world.

Human Resources Practices and Unionization

Ichniowski et al. (1997) examined the productivity effects of human resources (HR) practices on production lines in the steel finishing processes of 17 unionized and non-unionized steel companies across the United States. The data were gathered through field interview that were conducted for one to three days at each site. To measure the lines of performance, the researchers accounted for the production processes. Information on HR practices was gathered by using both data from the interviews as well supporting information obtained from other sources, such as personnel files, collective

bargaining agreements. The HR variable measured work practices in all major areas of personnel management, including compensation, team-based work organizations, flexible job assignment, employment security, communication procedures, and skills training. The researchers found that clusters of complementary human resources practices had an effect on performance. Specifically, workers' performance is better under a system of practices that included incentive pay plans coupled with work practices such as flexible job design, employee participation in problem solving teams, and training. Overall, the results suggest that HR practices are more relevant when considered in clusters (as a group) than when considered individually.

Boning et al. (2001, 2007) also examined the impact of HR practices, such as incentive pay and problem solving teams, on productivity of US steel mills production lines. Data were obtained through site visits and interviews over a three-year period. The incentive pay plan was a function of production, product quality and profits. Problem solving was measured by the presence of a formal team structure designed to involve production workers in indentifying ways to improve the production. Productivity was measured in terms of yield: the ratio of the number of "high quality" tons produced over the total number of tons that had been loaded onto the productivity captured both the output and the quality dimensions. Furthermore, the authors also noted that workers improved productivity by undertaking activities and decisions that limited and/or prevented the production of low quality output, e.g., due to "wrecks" on the line caused by jams. The results of their study showed that the adoption of these HR practices led to

increases in productivity; the magnitude actually increased where the production process was complex.

The above studies focused on the steel-industry; it could be argued that their results might not generalize to a broader segment of the economy. However, Black and Lynch (2003, 2004) showed that similar results are obtained across different industry sectors. They used data from the 1994 and 1997 Educational Quality of the Workforce (EQW) National Surveys. These surveys had been administered by the U.S. Bureau of the Census to a nationally representative sample of private manufacturing establishments in the USA. The factors considered included incentive plans, such as profit sharing or stock options, and employee participation as measured by unionization. The effect of these factors on productivity was assessed using the Cobb-Douglas production model. The researchers performed two types of analysis: cross sectional and longitudinal analyses.

For the cross sectional analysis, the authors used only the 1997 data. The results showed that organizations offering profit sharing or stock options, and unionized organization had higher productivity levels. The authors also considered whether organizations had undergone a recent HR re-engineering effort. Interestingly, they found that unionized establishments that had gone though a recent re-engineering effort had higher productivity, suggesting that unions can play a positive role by making workplace reorganizations more effective. The longitudinal analysis confirmed the effect of unionization but not that of profit sharing.

In our study, we examined both HR practices and unionization. For clarity, HR practices were aggregated in two clusters. The first included HR practices related to compensation, such as profit sharing, skill based pay, etc. The second cluster included

HR practices related to work organization, such as problem solving teams, flexible job design, etc.

In this study, unionization was measured as the proportion of employees that are unionized at the workplace.

Age of the organization

According to the product life-cycle theory, there are different stages in the life span of a product/industry (introduction, growth, maturity and decline). Bartel and Lichtenberg (1987) argued that younger organizations might be less productive, particularly at the early stages. To this purpose, they examined the extent to which the product life-cycle was applicable to the high technology industries in the USA. They targeted the high technology field because they assumed that organizations working in this sector were likely to be younger than those working in other sectors.

The determination of whether an industry was classified as being a high technology industry was based on the ratio of Research and Development (R&D) expenditures to total sales. If the industry was above a certain threshold, it was classified as high technology. The authors developed a database comprising of longitudinal data for 61 manufacturing industries for the period 1960, 1970 and 1980. The data were obtained from different sources. The Industrial Analysis and Productivity Research Program (IAPRP) of the US Department of Commerce provided estimates of the number of data on capital stock (plant and equipment), as well as the average age of capital stock for each industry. Data on industry output were obtained from the Census/PRI/Penn Database. They then used a technology matrix developed by Scherer that measured each

industry's R&D expenditures in 1974. Using Scherer's figure, Bartel and Lichtenberg computed the ratio of 1974 R&D expenditures to 1974 sales for each of the industry in their database. The ratio was used to distinguish the high technology industry and the rest of the manufacturing sector.

The data on output and capital stock confirmed the product life-cycle approach. For all three years (1960, 1970, 1980) the capital/labor ratio in the high tech industry was lower than in the other manufacturing industries. Output per worker was lower, and their capital stock was newer. This is because according to the product life cycle-theory, in the early stages growth is slow. At the early stages, output may be rapidly increasing but the capital equipment has yet to be developed and the workforce is focused primarily on finding a competitive production technology.

The WES data set provides information on the years of operation for the establishment. However the variable which measured years in existence was introduced only in 2003, prior to that we used same address (i.e., time located at the current address) as a proxy for the age of the organization.
5 Chapter: Overview of the experimental plan

The goal of the research was to investigate, using the WES data, the indirect advantage of training on the productivity of the organization. The central idea of the research was that training might affect productivity both directly and indirectly. The direct effect is due to the increase in skill set which presumably increases productivity. However, training might affect productivity in other, less direct, ways. Training might affect variables such as the turnover within a company, the level of absenteeism, and job satisfaction. In turn, these variables might have positive or negative effects on productivity. While the direct effect has been the object of research, the indirect effects have received little attention. Nonetheless, in the literature review we have seen some empirical evidence, albeit limited, of this indirect relationship. These studies have typically examined the relations separately, and not comprehensively, and not on the same data set. The link between these variables had never been the object of a specific study over a certain period of time, and certainly not in the Canadian context. From the literature review, we also noted that most researchers had investigated the relation between training and productivity at the level of the individual worker. Few researchers, and only recently, had begun to examine the impact of training on labor productivity at the organizational level. We take advantage of the Workplace and Employee survey (WES) provided by Statistics Canada, which affords the opportunity to examine all of these relations using the same dataset over a period of time, within the Canadian context and at the level of the organization.

To analyze the indirect effect, we adopted a two-step approach. The first step measures, using a regression approach, the effect of training on absenteeism, turnover, and job satisfaction. The next step measures the effect of these variables on productivity. If the indirect effect hypothesis were correct, we would expect to find first an effect of training on the level of absenteeism, turnover, and job satisfaction; next, we would also expect to find an effect of all four variables: training, absenteeism, turnover, and job satisfaction, on productivity. The effect of training would demonstrate its direct relationship to productivity possibly via the newly acquired skills; the effects of absenteeism, turnover, and job satisfaction, on productivity mediated by those variables. To investigate this hypothesis, we conducted both a cross sectional and longitudinal analyses on the WES data for the years 1999, 2001, 2003, and 2005. Before providing the result in the following sections, we are going to describe:

a) the WES data set

b) the operational definition of all the variables used in the analysis

c) the type of analyses: cross and longitudinal that were used to investigate the above hypothesis.

5.1. Characteristics of the Data Set

The Workplace Employee survey (WES) provides the data used for the analysis in this research. The proposed investigation requires information on events taking place in the organization (e.g., training), workers outcomes (e.g., job satisfaction, and absenteeism), and organizational outcome (e.g., overall productivity). The WES dataset contains this type of information.

The organizations participating in the WES are sampled from the Business Register (BR) maintained by Statistics Canada. The organizations in the survey include both profit and non-profit organizations of various sizes operating in various sectors of the economy, such as retail trade, education, forestry. It does not include employers in Yukon, Nunavut and the Northwest Territories. Employers operating in the public administration; crop production and animal production; fishing; hunting and trapping; private households; and religious organizations are also excluded from the target population. Nonetheless, the WES is a very large survey: over the years there have typically been on average 6,000 workplaces and 20,000 employees in the survey.

5.1.1 The Workplace Employee Survey (WES)

WES came about as a response to changes that were taking place in the labor market and among organizations (Picot and Wannell, 1997) in the 1990s. To better understand the nature and the impact of those changes, a very specific dataset was needed which would provide information on the characteristics of both the organization and the workforce. The WES survey addresses this need for it is made up of two questionnaires: one on the organization (the Workplace questionnaire) and the other on the workers (the Employee questionnaire). Both the Workplace and the Employee surveys are administered for the same organization. The Employer questionnaire is usually completed by the human resource manager in a large firm and the business owner in a small firm. The Employee questionnaire is completed by a sample of workers of the same organization.

Combined, these two questionnaires collect data on four major categories: employee outcomes, workplace characteristics, worker/job characteristics and workplace outcomes. Within each category, a large number of indicators are included. These are summarized in Figure 5.1.

One of the main advantages of WES is that the responses of the employees (using WES Employee questionnaire) can be linked to the characteristic of the organization (using WES Employer questionnaire) and vice versa⁵. For example, the employees' responses to a question on sick leave absenteeism (e.g., Q18b can be related to a response on the performance of the organization (e.g. Q 39), on the employer questionnaire. The relation can also go the other direction. Events taking place in the firms (e.g., Q15 training expenditures) can be related to the outcomes of the workers (e.g., Q38 on overall satisfaction).

5.1.2. The Longitudinal Nature of the WES

The most important characteristic of the WES is its longitudinal nature. This provides an opportunity to study the relationships between the variables over time. The WES was first administered in 1999 and ended in 2006.

The Employer questionnaire was administered every year. Some of the organizations in the original dataset abandoned the survey for various reasons. These

⁵ In WES, there is a variable identifying each workplace and also each employee. In the employee dataset, each employee has a workplace identifier that can be used to link it to the workplace dataset.

organizations were replaced by others always sampled from the BR. Therefore, for most organizations that participated in the WES there are now up to eight years worth of data, 1999 to 2006. The reference period for each survey was the previous fiscal year (e.g., for WES 1999, it is April 1, 1998 to March 31, 1999).

From each participating organization, a subset of workers was sampled from a list of employees made available to interviewers by the organization itself. A maximum of twenty-four employees were sampled using a probability mechanism. In workplaces with fewer than four employees, all employees are selected. The Employee questionnaire was administered every year; however, employees were followed for two years only. This was due to the difficulty of integrating new employers into the location sample as workers changed companies. Therefore, new samples of employees were selected every two years. This means that there were four samples of employees: first sample 1999-2000; second sample 2001-2002; and the third sample 2003-2004, and fourth sample 2005-2006.

In our analysis, we used data for the odd years: 1999, 2001, 2003 and 2005 for both the employee and the workplace. There are a number of reasons for doing this. First, there are a greater number of employees and workplaces in the odd years than the even years. This is because there is a tendency to drop out of the survey in the second year. Secondly, the response rate is higher during the odd years than it is during even years. Thirdly, data for some of the operational definitions used in our analysis (e.g., workplace practices) are provided only for the odd years.

In our sample, we also excluded workplaces with ten employees or less. This was done because of confidentiality concerns. We would have been unable to report cases where there are ten or fewer employees. Additionally, questions on human resources practices, which was one of the explanatory variable used throughout our research, were not available for small organizations. Finally, nonprofit organizations were also removed for the main objective of the research was to examine productivity. A non-profit organization might not be as concerned about productivity as would a for-profit organization.

The WES categorizes the sampled organizations according to their organizational size (4 categories) and economic sector (14 categories). In this work, we considered all organizations, with the already noted exception of those with ten employees or less.

To ensure the representativeness of the sample, Statistics Canada assigned to all sampled units, employees and workplaces, a sampling weight. According to Statistics Canada, these weights should be used in all analyses aimed at estimating the characteristics of the respective population. Recall that the WES consists of two surveys: Workplace and the Employee. The dual nature of the survey was meant to allow the study of the characteristics of the workplace, the characteristics of the employee, as well as the relationships between those characteristics. Accordingly, Statistics Canada provided three sets of weights: the workplace final weight, employee final weights, and the linked weight. The first set is composed of weights given to each organization and it is to be used for analysis pertaining to the characteristics of the workplace. The second set is composed of weights given to each employee within an organization and it is to be used for analysis pertaining to the characteristics of the employees. The third set is composed of weights given to each employee and it is to be used for analysis which connects the characteristics of the employee (e.g., average age) to the characteristics of the workplace (e.g., the effect of average age of workforce on some performance index).

In this study, the analyses were done on the characteristics of the organization using workplace data; therefore, these analyses used the workplace weights (i.e., the first set). Most workplace data were obtained from the Workplace questionnaire. However, some additional workplace data were obtained from the Employee questionnaire by aggregating individual employee data. For example, we used "average days of sick leave" as one of the measures of absenteeism for an organization. For each organization, the weighted average was obtained from the Employee survey, using the linked weight (i.e., the third set), and added to the workplace data for that organization.



Changing human resources practices

Figure 5.1 – The four categories of data in the WES

5.2. Operational Definition of the Variables used in the Study

For each of the four years of interest, we used a group of variables that have been identified in the literature as being related to productivity, and were available in the WES. In addition to productivity, we measured the following variables: training; absenteeism both paid and unpaid; turnover; overall job satisfaction and satisfaction with compensation; number of employees at workplace; outward looking of the organization; use of technology; age of workforce; number of dependent children; average pay; tenure; workplace practices related to compensation and those with human resources; number of promotions; skill level of workforce; and unionized workforce.

The analysis was done at the level of the organization. Accordingly, all data referred to the characteristics of the organization. Therefore, as noted in the previous section, most of the data were obtained directly from the Workplace survey with the exception of few variables which were obtained directly from the employee survey. The data obtained from the employee survey were aggregated to obtain summary measures of the variable for the organization. For example, the level of absenteeism for an organization was calculated as the weighted average of the number of sick days reported by the employees of that organization.

5.2.1 Measure of Productivity

The productivity of an organization was defined as value added per worker, as suggested by Turcotte & Rennision (2004:28), where value added is measured as gross revenue minus expenses on materials. Expenses on materials are equal to gross operating

expenditures less payroll and expenses on non-wage benefits and training. We divided

the resulting value by the number of employees:

Productivity= (revenue-(expntr-(grspayrl+sal_expn+trng_exp))) / ttl_emp.

TABLE 5.	TABLE 5.1 VARIABLES USED IN MEASURING THE PRODUCTIVITY VALUE						
Code name	WES name	WES description					
Revenue	Revenue	For this same fiscal year, what was the gross operating revenue from the sale					
		or rental of all products and services for this location?					
Expntr	Expntr	What were the gross operating expenditures for this location for the most					
		recently completed fiscal year? Please include the payroll and non-wage					
		expenses and the purchase of goods					
Grspayrl	Grspayrl	What was the total gross payroll for all employees at this location between					
		April 1 [] and March 31, []? (If the information is not available for the					
		specified period, report the total gross payroll for the most recently completed					
		fiscal year.)					
sal_expn	sal_expn	What was the total expenditure on non-wage benefits at this location between					
		April 1, [] and March 31, []?					
trng_exp	trng_exp	Please estimate this workplace's total training expenditures between April 1					
		[] and March 31 [].					
ttl_emp	ttl_emp	Number of Employees					
Notes:							
Code name is the name used in the syntax file for the analysis							
WES name i	s the name use	ed in the WES for the same variable					

5.2.2. Measures of Training

We consider several measures of training. From the Workplace survey, we obtained measures of formal training such as the sum of different types of courses provided in classroom format, the number of employees who received classroom training, and the total training expenditure at workplace per employee. We also obtained measures of informal training, such as the sum of different types of courses provided through onthe job training, and the number of employees who received on-the job-training. Some of these measures were obtained directly from WES variables, whereas the others were obtained by coding of appropriate WES variables. From the Employee survey, we obtained by aggregation of individual responses additional measures of training such as the percentage of workers claiming that the amount of training available was too little for the demands of the job as well as the percentage of workers claiming that the amount of training available to employees increased.

Table 5.2 summarizes the training variables and illustrates their origin within WES.

Code nameDescriptionWES nameWES descriptionSum_Courses_in_ClSum of different types of courses provided in classroom format.From trng1_2 trng1_14Trom trng1_2 trng1_16Between April 1 [],and March 31 [], did this workplace pay for or provide any of the following types of classroom job-related training: (e.g., sales, or computers)Proportion_Employe es_Receiving_Classr oom_TrainingProportion of employees training, that is the number of employeestrn_emp1Please estimate the number of employees who received classroom training divided by the number of employeestrn_emp1Please estimate the number of employees who received classroom training between April 1, [], and March 31, []. (Include full-time, part-time, permanent and temporary employees)Average_Expenditur e_for_TrainingTraining expenditure at workplace per employeetrng_expPlease estimate this workplace's total training expenditures between April 1 [], and March 31, []. (See Employee's total training expenditures between April 1 [], and March 31, []. Same as aboveSum_Courses_in_O nthe job FormatSum of different types of courses provided through on-the job trainingFrom trng2_2 to trng2_14Between April 1 [] and March 31 [], did this workplace pay for or provide any of the following types of on-the-job trainingProportion_Employee es_Receiving_Onthe Job_TrainingProportion of employees who received on-the job trainingFrom trng2_2 to traingBetween April 1 [] and March 31 [], did this workplace pay for or provide any of the following types of on-the-job training<	TABLE 5.2 VARIABLES USED TO MEASURE TRAINING								
Sum_Courses_in_Cl assroom_FormatSum of different types of courses provided in classroom format.From trng1_2 to trng_14Between April 1 [.]and March 31 [.], did this workplace pay for or provide any of the following types of classroom job-related training: (e.g., sales, or computers)Proportion_Employe es_Receiving_Classr oom_TrainingProportion of employees who received classroom training divided by the number of employees who received classroom training divided by the number of employeestrn_emp1 (Include full-time, part-time, permanent and temporary employees)Average_Expenditur e_for_TrainingTraining expenditure at workplace per employeetrng_exp (I_empAverage_Expenditur e_for_TrainingTraining expenditure at workplace per employeetrng_exp (I_empSum_Courses_in_O ntheJob_FormatSum of different types of courses provided through on-the job trainingtrng_exp (I_empProportion Employe es_Receiving_Onthe Job_TrainingSum of different types of courses of on-the-job trainingFrom trng2_2 the provided through on-the job trainingTrm_emp2Proportion Employe es_Receiving_Onthe Job_TrainingProportion of employees who received on-the job- trainingTrm_emp2Please estimate the number of employees the provided through on-the job training	Code name	Description	WES name	WES description					
Proportion_Employe es_Receiving_Classr oom_TrainingProportion of employees who received classroom training divided by the number of employeestrn_emp1Please estimate the number of employees who received classroom training between April 1, [], and March 31, []. (Include full-time, part-time, permanent and temporary employees)Average_Expenditur e_for_TrainingTraining expenditure at workplace per employeetrng_expPlease estimate the number of employees who received classroom training between April 1, [], and March 31, []. (Include full-time, part-time, permanent and temporary employees)Average_Expenditur e_for_TrainingTraining expenditure at workplace per employeetrng_expPlease estimate this workplace's total training expenditures between April 1 [] and March 31 []. Same as aboveSum_Courses_in_O ntheJob_FormatSum of different types of courses provided through on-the job trainingFrom trng2_2 to trng2_14Between April 1 [] and March 31 [], did this workplace pay for or provide any of the following types of on-the-job training?Proportion_Employe es_Receiving_Onthe Job_TrainingProportion of employees who received on-the job trainingtrn_emp2Please estimate the number of employees who received on- the-job training between April 1 (Include full-time, part-time, permonent and temporary employees	Sum_Courses_in_Cl assroom_Format	Sum of different types of courses provided in classroom format.	From trng1_2 to trng1_14	Between April 1 []and March 31 [], did this workplace pay for or provide any of the following types of classroom job-related training: (e.g., sales, or computers)					
Average_Expenditur e_for_TrainingTraining expenditure at workplace per employeetrng_expPlease workplace's tainingPlease estimatethis workplace's expendituresSum_Courses_in_O ntheJob_FormatSum of different types of courses provided through on-the job trainingFrom trng2_2 trng2_14to trng2_14Between April 1 [] and March 31 [], did this workplace pay for or provide any of the following types of on-the-job training?Proportion_Employe es_Receiving_Onthe Job_TrainingProportion of employees who received on-the job- trainingtrn_emp2Please estimate the number of employees who received on- 	Proportion_Employe es_Receiving_Classr oom_Training	Proportion of employees who received classroom training, that is the number of employees who received classroom training divided by the number of employees	trn_emp1 ttl_emp.	Please estimate the number of employees who received classroom training between April 1, [], and March 31, []. (Include full-time, part-time, permanent and temporary employees) In the last pay periods of March [], and March [], how many employees receiving a T4 Slip were employed at this location? (See Employee Category Definitions at the end of the questionnaire					
on-the job trainingfor or provide any of the following types of on-the-job training?Proportion_Employe es_Receiving_Onthe Job_TrainingProportion of employees who received on-the job- trainingtrn_emp2Please estimate the number of employees who received on- the-job training between April 1 following types of on-the-job trainingplease estimate the number of employees who received on- the-job training between April 1	Average_Expenditur e_for_Training Sum_Courses_in_O ntheJob_Format	Training expenditure at workplace per employee Sum of different types of courses provided through	trng_exp ttl_emp From trng2_2 to trng2_14	Please estimate this workplace's total training expenditures between April 1 [] and March 31 []. Same as above Between April 1 [] and March 31 [], did this workplace pay					
	Proportion_Employe es_Receiving_Onthe Job_Training	on-the job training Proportion of employees who received on-the job- training	trn_emp2	for or provide any of the following types of on-the-job training? Please estimate the number of employees who received on- the-job training between April 1 [1] and March 31[1] (Include					

		ttl_emp	full-time, part-time, permanent and temporary employees Same as above			
Percent_Workers_Cl aiming_Too_Little_ Training_for_Job*	Percentage of workers claiming that the amount of training available was too little for the demands of the job.	amtrain	Would you say that the amount of training that you take is: too little, too much for the demands of the job			
Percent_Workers_Cl aiming_Availability _Training_Increased *	Percentage of workers claiming that the amount of training available to employees has increased.	avtrain	Since you began working for this company, has the amount of training available to employees: increased, decreased or remained about the same?			
*These variables were derived from the Employee survey. The summary measures such as average or percentage are computed from the sample itself. Thus, average means the <i>average</i> of the responses of the individual belonging to the organization. Similarly, <i>percentage</i> refers to the percentage of individuals' responses in the sample of the individual belonging to the organization.						

5.2.3. Measures of Turnover, Absenteeism and Job Satisfaction

The data for turnover were obtained from the workplace survey. We divided the number of resignations by the total number of employee to obtain an index of average turnover. The total number of employees in this case was adjusted to account for seasonal peaks as suggested by Morisette and Rosa (2003). We measured absenteeism from the Employee survey by aggregating individual responses. We used two measures of absenteeism: average number of paid sick leave and average of days of other unpaid leave. The data for job satisfaction were obtained from the Employee survey by aggregating individual responses. We measured satisfaction as well as satisfaction pertaining to compensation.

Table 5.3 summarizes the turnover, absenteeism and job satisfaction variables and illustrates their origin within WES.

JOB SATISFACTI	ON		· · · · · · · · · · · · · · · · · · ·
Code name	Description	WES name	WES description
turnover	Number of resignations divided by total number	ttl_emp	Same as above
	of employees in the workplace which has been adjusted to account for seasonal peaks, if any.	ttl_quit	Please estimate by reason the number of employees who have permanently left this location between April 1 [] and March 31[]. Resignations (No special incentives)
		peak_emp	
			What is the maximum employment during that (these) peak(s)? (total number of employees was adjusted to account for seasonal peaks)
Average_Days_of_Si ck_Paid_Leave*	Average of "days of paid sick leave"	pd_skc	How many days of paid sick leave have you taken?
Average_Days_of_Ot her_Paid_Leave*	Average of "days of other paid leave"	pd_oth	How many days of other paid leave have you taken (for example education leave, disability leave, bereavement, marriage, jury, duty, union business)?
Average_Days_of_U npaid_Leave*	Average of "days of other unpaid leave"	upd_days	How many days of unpaid leave have you taken?
Median_Overall_Sati sfaction*	Median overall satisfaction of individuals in the workplace.	Satisjob	Considering all aspects of this job, how satisfied are you with the job? N.B. the response scale is inverse, hence higher value of this variable implies less satisfaction.
Median_Compensatio n_Satisfaction*	Median satisfaction in compensation of individuals at the workplace	Satismon	Considering the duties and responsibilities of this job, how satisfied are you with the pay and benefits you receive?
*These variables are c	lerived from the Employee	survey. The summa	ry measures such as average or
percentage are compute	ed from the sample itself. Th	us, average means th	e average of the responses of the
responses in the sample	o the organization. Similarly	, <i>percentage</i> refers 1 to the organization	to the percentage of individuals'

TABLE 5.3 VARIABLES USED TO MEASURE TURNOVER, ABSENTEEISM, and JOB SATISFACTION

5.2.4. Measures of Control Variables

We also included in the analysis variables which could possibly have an effect on productivity, such as use of technology; age of workforce; average pay; tenure; workplace practices related to compensation. These variables are listed in Table 5.4.

TABLE 5.4 CONT	TROL VARIABLES		
Code name	Description	WES name	WES description
Characteristic of the	Organization		
Organization_Age_ same_adr	Time located at same address	same_adr	Approximately how long has this workplace been located at this address? Please do not exclude periods of temporary
	Years in operation	yr_exist	shutdown from your answer.
			This variable was introduced in 2003, and indicates years in operation prior to that same address was used as a proxy for age of organization.
ttl_emp	Number of employees employed at this location	ttl_emp	Same as above
Percentage_ExportS ales	Percentage of total sales from all products and services that are exported to USA market and the	mrkt_usa	Between April 1 [] and March 31 [], what percentage of your total sales from all products and services were in each of the
	rest of the world.	mrkt_wld	following market areas: USA
			Between April 1[] and March 31[], what percentage of your total sales from all products and services were in each of the following market areas: Rest of the world
Characteristics of the	e Workplace	r	r
Sum_HR_Practices_ Compensation	Sum of all HR practices related to work compensation practices	incen	Does your compensation system include the following incentives? Individual incentive systems such as bonuses, piece rate, and commissions are systems that reward individuals
		gams	on the basis of individual output or performance.
		proft	system include the following incentives? Group incentives systems such as productivity/quality gain- sharing are systems that reward

		merit	individuals on the basis of
			group output or performance
			Commonly these benefits con
			Commonly, these benefits can
			be in form of money payments
			in the primary industries
			Does your compensation
			system include the following
			incentives? Profit sharing plan
			Does your compensation
		1	system include the following
			incentives? Merit pay and
			skilled based pay
Sum LID Prostings	Sum of all LID practices	Enom wells and to	Fan nan managarial amplayas
Sum_FIX_Flactices_	Sum of an HK practices	FIOIN WIK_OIGI LO	For non-manageriar employees,
Organization_of_w	related to work	wrk_orgo	which of the following
ork	organization		practices exist on a formal basis
			in your workplace?
			(Employee's suggestion
			program; Flexible job design;
			Information sharing with
			employees; Problem solving
			teams; Joint labour-
			management committees and
			Self-directed work groups)
Proportion Fulltime	Proportion of full time	full tim	Of the total employment in
HighSkilled Work	managers professionals		March [] how many were in
	& technical/trade to lower		the following categories? Full-
013	skill level of other		time amplevees: working 20 or
	skill level of outer	6.11 mm	time employees. working 50 or
	occupations as per		more nours per week.
	Statistics Canada	full_pr	
	definition in Appendix of	full_tc	Of the total employment in
	Guide**		March [], how many were in
			the following categories? (See
			Employee Category Definitions
			at the end of the questionnaire)
			Full-time Management
			Full-time Professionals
			Full-time Technical
Proportion Unionize	Percent of unionization at	ttl cba	Of the total employment in
d Workforce	workplace		March [], how many
	, comprass	ttl emp	employees were covered by
		"_omp.	collective bargaining
			agreements at this location?
Augrage Workplage	Average number of	numated	Lawa you over been promoted
Average_workprace	Average number of	printa	while working for this
	promotions in the		while working for this
	workplace		employer?
	l		
Characteristics of th	e Workforce	· · · · · · · · · · · · · · · · · · ·	
Average_Employme	Average salary at the	grspayrl	What was the total gross
nt_Salary	level of the workplace.		payroll for all employees at this
			location between April 1 []
			and March 31[]?
		sal_expn	

		<u></u>	
		ttl_emp.	What was the total expenditure on non-wage benefits at this location between April []and March 31, []?
			In the last pay periods of March[] and March [], how many employees receiving a T4 Slip were employed at this location?
Proportion_Employe es_Using_Computer s	Percentage of employees using computers as part of their work	cpu_user	At this location, how many employees currently use computers as part of their normal working duties?
		ttl_emp.	
			In the last pay periods of March [], and March [], how many employees receiving a T4 Slip were employed at this location?
Average_Family_Sa laryOther_Income*	Average family income from other sources other than employment	oth_inc	Over the past twelve months what was your family's approximate annual income from sources other than employment? For example, pensions, investment income and social benefits. Please include your own income from sources other than employment.
Average_Workforce _Tenure*	Average tenure of workforce in the workplace as reported by the individual employees	strtemp	When did you start working for this employer? N.B this value was used to calculate the number of years of employment within the same organization
Average_Age_Work force xx*	Average age of workforce	Birthdat	In what year were you born?
Percent_Workers_H aving_Young_Kids*	Percentage of employees in the workplace that have children equal or less than 6 years old	KID_1 to KID_8	Details of age of child: Please indicate their ages, starting with the youngest.

*These variables are derived from the Employee survey. The summary measures such as average or percentage are computed from the sample itself. Thus, average means the *average* of the responses of the individual belonging to the organization. Similarly, *percentage* refers to the percentage of individuals' responses in the sample of the individual belonging to the organization.

** Statistics Canada considers seven categories of employees: (i) Management; (ii) Professionals; (iii) Technical/Trades (iv) Marketing/Sales (v) Clerical/Admin (vi). Production workers with no trade/certification (vii) Other. The ones considered for skill level in the organization are the first three for which at least a certificate and university degree is required. It is then divided by the total number of full time employees.

5. 3. Type of Analyses

In the study, we first examined the effect of training on the three variables: turnover, absenteeism and job satisfaction. Next we examined the relationship between these variables (Table 5.2 and 5.3), plus the control variables described above (Table 5.4), and productivity (Table 5.1). In both cases, the relationships were evaluated with a linear regression approach applied to two types of analyses. The first was a cross sectional analysis which examined the relationships between the variables of interest within each single year. The second was a longitudinal analysis based on the differences, for variables, between two years. All analyses were performed using a commercially available statistical program, SPSS V18. Most of the major assumptions of ordinary least squares regression were tested for the most general models of interest. In addition, potential limitations due to multicollinearity were examined. Generally, no major problems were found. The few minor problems that did emerge were deemed to be quite minimal in their impact in light of the properties of large sample analysis.

5.3.1. Cross-sectional Analysis

As noted, some of the data were obtained directly from the WES whereas others were obtained by re-coding the WES existing data. In addition, some of the data originated from the Workplace survey whereas others originated from the Employer survey. Thus after recoding, we had to combine all the data in one single, merged, dataset. In practice we

(I) created an intermediate employee data set which coded the variables of interest contained in the Employer survey;

(II) created an intermediate workplace data set which coded the variables of interest in the Workplace survey;

(III) merged the intermediate employee and workplace data set so as to create a single "merged data set" at the organizational level;

(IV) applied the regression approach on the merged data.

A linear regression was applied separately for each of the four years of interest: 1999, 2001 2003, and 2005. As an example the year 1999 is shown below

 $Y_{1999} = a + b_1 (X_{1 1999}) + b_2 (X_{2 1999}) + \dots b_j (X_{J 1999}),$

where Y is the productivity, a is the constant and b_1 .. b_j are the coefficients, and X_1 .. X_j are the predictors.

Statistics Canada recommends the use of weights in all analyses which use WES data. For the regression, we used as suggested by Statistics Canada, the workplace final weight (Statistics Canada, 2004:53).

A simple outlier analysis, based on the Cook's distance (Lorenz, 1987) was performed before the regression. It was decided a priori to exclude cases for which Cook distance > 1. Missing data were handled using the listwise approach. As noted in Section 5.1.2 above, organizations with fewer than ten employees and those operating for nonprofit purposes were also excluded. Nonetheless, the sample size remained big albeit it varied between 2000 to 3500 organizations depending on the year used.

5.3.2. Longitudinal (Differential) Analysis

As shown in the literature review section, one of the first authors to have performed an analysis at the organizational level was Bartel (1994). However, Bartel did not use a cross-sectional analysis, but rather one that can be defined as a differential approach. In this approach, changes in one dependent variable (increase or decrease) across years are related to similar changes in the independent variables of interest. We decided to use also this approach since we, as Bartel, are performing the analysis at the organizational level.

To create datasets, which contained differences between two years, we used the same datasets for single years for the cross-sectional analysis. As such, the new differential dataset contained differences for all variables contained in those datasets. The only exceptions were the 'age of the organization' and of the 'age of the workforce' as the differences would have yielded constant values.

The differential merged data sets were created for two, four and six year time span for a total of six data sets as shown below:

(I) two year difference: 2001-1999; 2003-2001; 2005-2003
(II) four year difference 2003-1999; 2005-2001
(III) six year difference 2005-1999
For each of these datasets, we performed a linear regression analysis using a model

as the example shown below:

 $Y_{2001}-Y_{1999} = a + b_1 (X_{1\ 2001} - X_{1\ 1999}) + b_2 (X_{2\ 2001} - X_{2\ 1999}) + \dots b_j (X_{j\ 2001} - X_{j\ 1999}),$

where Y is the productivity, a is the constant and b_1 .. b_j are the coefficients, and X_1 .. X_j are the predictors.

Statistics Canada recommends the use of weights in all analyses which use WES data. For the regression on differences between years, we used as suggested by Statistics Canada, the workplace final weight of the least recent year (Statistics Canada, 2004:53). For example, if the regression was being performed on the differences between 2003-1999, we used the workplace weight for 1999. If, on the other hand, the analysis was

being done on the differences between 2005-2001, we used the workplace weight for 2001.

As we did for the cross-sectional case, we performed an outlier analysis based on the Cook's distance. Here too we decided a priori to exclude cases for which Cook's distance > 1. Missing data (i.e., cases for which a difference could not be computed) were handled using the listwise approach. All organizations with fewer than 10 employees and those operating for nonprofit purposes were also excluded. The sample size varied depending on the years under analysis ranging from 1800 to 2200.

5.4. List of the Analyses

The results of these analyses are presented in the following chapters:

- a) Chapter 6 Training vs. Turnover
 - a.1 Cross Sectional
 - a.2 Longitudinal (Differential)
- b) Chapter 7 Training vs. Absenteeism
 - b.1 Cross Sectional
 - b.2 Longitudinal (Differential)
- c) Chapter 8 Training vs. Job Satisfaction
 - c.1 Cross Sectional
 - c.2 Longitudinal (Differential)
- d) Chapter 9 Productivity vs. Training, Turnover Absenteeism, Job Satisfaction
 - d.1 Cross Sectional
 - d.2 Longitudinal (Differential)

6 Chapter: The effects of Training on Turnover

Turnover refers to the rate at which employees/workers change organizations. Turnover can be costly for the organization as there are expenses associated with replacing the employee. If the departing employee had also been trained, there is the additional loss of investment in the training. As such, the fear of losing trained workers may lead to less investment in training than is desirable in a competitive market.

In this chapter we will present the results of the cross sectional and longitudinal analyses that examined the relationship between training and turnover.

Turnover was measured as the number of resignations divided by total number of employees adjusted to account for peaks in seasonal employment, if any. With regards to training, we used all the seven training variables which were:

-Percentage of workers claiming that the amount of training available was too little for the demands of the job (Percent Workers Claiming Too Little Training for Job); -Percentage of workers claiming that the amount of training available to employees has increased (Percent Workers Claiming Availability Training Increased); -Average Training Expenditure (Average Expenditure for Training); -Proportion of employees who received classroom training (Proportion Employees Receiving Classroom Training); -Proportion employees who received job-training of on-the (Proportion Employees Receiving OntheJob Training); -Sum of different types of courses provided in classroom format (Sum Courses in Classroom Format) -Sum of different types of courses provided through on-the job training (Sum Courses in OntheJob Format).

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6.1. Training and turnover: Cross-sectional Analysis for 1999

Table 6.1a reports the R square for the 1999 data; Table 6.1b reports the ANOVA table and Table 6.1c reports the regression coefficients, standardized and non-standardized, with their associated significance levels.

Tabl	Table 6.1a. Training vs Turnover, 1999 - Cross-Sectional Model Summary								
		Adjusted	Std Error					_	
R	R Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig F Change	
243	0 059	0 057	1 318	0 059	28 930	7	3220	0 000	

Table 6.1b. T	raining vs Turnover	, 1999 - Cro	ss-Sectional ANO	VA	
	Sum of Squares	df	Mean Square	F	Sig
Regression	351 829	7	50 261	28 930	0 000
Residual	5594 195	3220	1 737		
Total	5946 024	3227			

Table 6.1c. Training vs	Table 6.1c. Training vs Turnover, 1999 - Cross-Sectional Coefficients							
	Unstandardized		Standardized					
	Coefficients	Std	Coefficients	t	Sig	Zero	lons	
	в	Error	Beta			order	Partial	Part
(Constant)	0 118	0 008		15 194	0 000			
Percent_Workers_Claiming_Too_	0 000	0 000	0 000	-0 008	0 994	0 025	0 000	0 000
Little_Training_for_Job_99			1				a de la constante de la consta	
Percent_Workers_Claiming_Avail	0 000	0 000	-0 041	-2 282	0 023	-0 045	-0 040	-0 039
ability_Training_Increased_99								
Average_Expenditure_for_Trainin	0 000	0 000	-0 041	-2 194	0 028	-0 054	-0 039	-0 037
g_99								
Proportion_Employees_Receiving	-0 078	0 014	-0 141	-5 691	0 000	-0 032	-0 100	-0 097
_Classroom_Training_99								
Proportion_Employees_Receiving	0 143	0 012	0 271	12 177	0 000	0 199	0 210	0 208
_OntheJob_Training_99								
Sum_Courses_in_Classroom_For	0 004	0 002	0 052	1 891	0 059	0 001	0 033	0 032
mat_99								
Sum_Courses_in_OntheJob_Form	-0 003	0 002	-0 038	-1 525	0 127	0 085	-0 027	-0 026
at_99								

6.2. Training and turnover: Cross-sectional Analysis for 2001

Table 6.2a reports the R square for the 2001 data; Table 6.2b reports the ANOVA table and Table 6.2c reports the regression coefficients, standardized and non-standardized, with their associated significance levels.

Table	Table 6.2a. Training vs Turnover, 2001 - Cross-Sectional Model Summary								
		Adjusted	Std Error						
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change	
266	071	069	2 09406	071	32 952	7	3023	000	
1	1								

Table 6.2b. T	raining vs Turnover	, 2001 - Cro	ss-Sectional ANO	VA	
	Sum of Squares	df	Mean Square	F	Sig
Regression	1011 491	7	144 499	32 952	000
Residual	13256 137	3023	4 385		
Total	14267 628	3030			

Table 6.2c. Training vs	Table 6.2c. Training vs Turnover, 2001 - Cross-Sectional Coefficients										
	Unstandardized		Standardized			Comita					
	Coefficients	Std	Coefficients		Sig	Zero-	ions	[
	В	Error	Beta			order	Partial	Part			
(Constant)	195	010		19 378	000						
Percent_Workers_Claiming_Too_	000	000	- 022	-1 248	212	- 008	- 023	- 022			
Little_Training_for_Job_01											
Percent_Workers_Claiming_Avail	- 001	000	- 116	-6 408	000	- 122	- 116	- 112			
ability_Training_Increased_01											
Average_Expenditure_for_Trainin	000	000	- 066	-3 312	001	- 060	- 060	- 058			
g_01											
Proportion_Employees_Receiving	035	018	046	1 943	052	025	035	034			
_Classroom_Training_01											
Proportion_Employees_Receiving	145	013	237	11 515	000	209	205	202			
_OntheJob_Training_01											
Sum_Courses_In_Classroom_For	- 007	003	- 062	-2 230	026	- 044	- 041	- 039			
mat_01											
Sum_Courses_in_OntheJob_Form	- 003	003	- 022	- 891	373	031	- 016	- 016			
at_01											

6.3. Training and turnover: Cross-sectional Analysis for 2003

Table 6.3a reports the R square for the 2003 data; Table 6.3b reports the ANOVA table and Table 6.3c reports the regression coefficients, standardized and non-standardized, with their associated significance levels.

Table 6.3a. Training vs Turnover, 2003 - Cross-Sectional Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
239	057	055	1 47747	057	26 744	7	3092	000		

Table 6.3b. Training vs Turnover, 2003 - Cross-Sectional ANOVA									
	Sum of Squares	df	Mean Square	F	Sig				
Regression	408 656	7	58 379	26 744	000				
Residual	6749 572	3092	2 183						
Total	7158 228	3099							

Table 6.3c. Training vs	Turnover, 200	03 - Cro	oss-Section	al Coef	ficien	ts		
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions	
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	116	007		15 799	000			
Percent_Workers_Claiming_Too_	000	000	021	1 209	227	024	022	021
Little_Training_for_Job_03								
Percent_Workers_Claiming_Avail	000	000	- 043	-2 348	019	- 038	- 042	- 041
ability_Training_Increased_03								
Average_Expenditure_for_Trainin	000	000	- 100	-4 882	000	- 067	- 087	- 085
g_03								
Proportion_Employees_Receiving	056	014	102	4 075	000	061	073	071
_Classroom_Training_03								
Proportion_Employees_Receiving	099	011	190	8 690	000	181	154	152
_OntheJob_Training_03								
Sum_Courses_in_Classroom_For	- 011	002	- 138	-4 709	000	- 038	- 084	- 082
mat_03								
Sum_Courses_In_OntheJob_Form	004	002	048	1 878	060	051	034	033
at_03								

6.4. Training and turnover: Cross-sectional Analysis for 2005

Table 6.4a reports the R square for the 2005 data; Table 6.4b reports the ANOVA table and Table 6.4c reports the regression coefficients, standardized and non-standardized, with their associated significance levels.

Tabl	Table 6.4a. Training vs Turnover, 2005 - Cross-Sectional Model Summary									
		Adjusted	Std Error							
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change		
406	165	163	1 51055	165	98 953	7	3509	000		
		1	1		1					

Table 6.4b. Training vs Turnover, 2005 - Cross-Sectional ANOVA									
	Sum of Squares	df	Mean Square	F	Sig				
Regression	1580 516	7	225 788	98 953	000				
Residual	8006 714	3509	2 282						
Total	9587 230	3516							

Table 6.4c. Training vs T	Turnover, 200)5 - Cro	oss-Section	al Coef	ficient	S					
	Unstandardized		Standardized		Sug Completions						
	Coefficients	Std	Coefficients	l	Sig	Zero-					
	В	Error	Beta			order	Partial	Part			
(Constant)	141	007		20 161	000						
Percent_Workers_Claiming_Too_	000	000	- 037	-2 393	017	- 018	- 040	- 037			
Little_Training_for_Job_05											
Percent_Workers_Claiming_Avail	000	000	- 044	-2 723	007	- 044	- 046	- 042			
ability_Training_Increased_05											
Average_Expenditure_for_Trainin	000	000	- 078	-4 210	000	- 042	- 071	- 065			
g_05											
Proportion_Employees_Receiving_	042	014	066	3 094	002	116	052	048			
Classroom_Training_05											
Proportion_Employees_Receiving_	238	011	433	22 363	000	341	353	345			
OntheJob_Training_05											
Sum_Courses_in_Classroom_Form	- 007	002	- 072	-2 937	003	- 055	- 050	- 045			
at_05											
Sum_Courses_1n_OntheJob_Forma	- 014	002	- 147	-6 529	000	001	- 110	- 101			
t_05											

6.5. Training and turnover: Longitudinal (differential) Analysis 2001-1999

Tables 6.5a and 6.5.b and 6.5c report the R square, ANOVA and the regression coefficients, standardized and non-standardized, with their associated significance levels, for the 2001-1999 data.

Tabl	Table 6.5a. Training vs Turnover, 2001-1999 - Longitudinal Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
143	020	017	1 41254	020	6 674	7	2242	000			

Table 6.5b. Training vs Turnover, 2001-1999 - Longitudinal ANOVA									
	Sum of Squares	df	Mean Square	F	Sig				
Regression	93 211	7	13 316	6 674	000				
Residual	4473 369	2242	1 995						
Total	4566 580	2249							

Table 6.5c. Training vs Turnover, 2001-1999 - Longitudinal Coefficients									
	Unstandardized		Standardized		C. a	Complete			
	Coefficients	Std	Coefficients	L	Sig	Zero-		[
	В	Error	Beta			order	Partial	Part	
(Constant)	058	005		11 082	000				
Percent_Workers_Claiming_Too_	001	000	082	3 887	000	087	082	081	
Little_Training_for_Job_0199									
Percent_Workers_Claiming_Availa	- 001	000	- 086	-4 076	000	- 094	- 086	- 085	
bility_Training_Increased_0199									
Average_Expenditure_for_Trainin	000	000	000	- 004	997	016	000	000	
g_0199									
Proportion_Employees_Receiving_	032	013	062	2 515	012	058	053	053	
Classroom_Training_0199									
Proportion_Employees_Receiving_	016	010	036	1 569	117	039	033	033	
OntheJob_Training_0199									
Sum_Courses_In_Classroom_Form	- 003	002	- 042	-1 565	118	- 002	- 033	- 033	
at_0199									
Sum_Courses_In_OntheJob_Forma	- 001	002	- 016	- 633	527	- 008	- 013	- 013	
t_0199									

6.6. Training and turnover: Longitudinal (differential) Analysis 2003-2001

Tables 6.6a and 6.6.b and 6.6c report the R square, ANOVA, and the regression

coefficients for the 2003-2001 data.

Tabl	Table 6.6a. Training vs Turnover, 2003-2001 - Longitudinal Model Summary											
		Adjusted	Std Error									
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change				
155	024	021	1 31430	024	7 137	7	2029	000				
			1									

Table 6.6b. T	raining vs Turnover	, 2003-2001	- Longitudinal AN	JOVA		
	Sum of Squares	df	Mean Square	F	Sig	
Regression	86 300	7	12 329	7 137	000	
Residual	3504 851	2029	1 727			
Total	3591 151	2036				

Table 6.6c. Training vs 7	Table 6.6c. Training vs Turnover, 2003-2001 - Longitudinal Coefficients									
	Unstandardized		Standardızed		~					
	Coefficients	0.1	Coefficients	t	Sig	Correlat	ions	r		
	В	Sta Error	Beta			Zero- order	Partial	Part		
(Constant)	- 019	005		-3 881	000					
Percent_Workers_Claiming_Too_	- 001	000	- 092	-4 161	000	- 091	- 092	- 091		
Little_Training_for_Job_0301				:						
Percent_Workers_Claiming_Avail	000	000	- 013	- 609	543	- 007	- 014	- 013		
ability_Training_Increased_0301										
Average_Expenditure_for_Trainin	000	000	- 016	- 692	489	- 005	- 015	- 015		
g_0301										
Proportion_Employees_Receiving_	055	012	112	4 514	000	057	100	099		
Classroom_Training_0301										
Proportion_Employees_Receiving_	001	004	009	386	699	015	009	008		
OntheJob_Training_0301										
Sum_Courses_in_Classroom_Form	- 009	002	- 113	-4 327	000	- 076	- 096	- 095		
at_0301										
Sum_Courses_in_OntheJob_Forma	- 001	002	- 011	- 470	638	- 038	- 010	- 010		
t_0301										

6.7. Training and turnover: Longitudinal (differential) Analysis 2005-2003

Tables 6.7a and 6.7.b and 6.7c report the R square, ANOVA, and the regression

coefficients for the 2005-2003 data.

Tabl	Table 6.7a. Training vs Turnover, 2005-2003 - Longitudinal Model Summary										
	_	Adjusted	Std Error								
R	R Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
219	048	045	1 23072	048	15 804	7	2204	219			

Table 6.7b. Training vs Turnover, 2005-2003 - Longitudinal ANOVA									
	Sum of Squares	df	Mean Square	F	Sig				
Regression	167 564	7	23 938	15 804	000				
Residual	3338 334	2204	1 515						
Total	3505 898	2211							

Table 6.7c. Training vs Turnover, 2005-2003 - Longitudinal Coefficients										
	Unstandardized		Standardızed							
	Coefficients	044	Coefficients	t	Sig	Correlat	ions			
	в	Error	Beta			order	Partial	Part		
(Constant)	015	004		3 608	000					
Percent_Workers_Claiming_Too_	000	000	- 018	- 879	380	- 021	- 019	- 018		
Little_Training_for_Job_0503				-						
Percent_Workers_Claiming_Avail	001	000	102	4 841	000	112	103	101		
ability_Training_Increased_0503										
Average_Expenditure_for_Trainin	000	000	024	1 099	272	030	023	023		
g_0503										
Proportion_Employees_Receiving_	018	012	038	1 568	117	079	033	033		
Classroom_Training_0503										
Proportion_Employees_Receiving_	084	011	180	7 634	000	153	160	159		
OntheJob_Training_0503										
Sum_Courses_in_Classroom_Form	- 002	002	- 018	- 737	461	- 002	- 016	- 015		
at_0503										
Sum_Courses_in_OntheJob_Forma	- 009	002	- 106	-4 539	000	- 044	- 096	- 094		
t_0503										

6.8. Training and turnover: Longitudinal (differential) Analysis 2003-1999

Tables 6.8a and 6.8.b and 6.8c report the R square, ANOVA and the regression

coefficients for the 2003-1999 data.

Tabl	Table 6.8a. Training vs Turnover, 2003-1999 - Longitudinal Model Summary										
R	Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change										
239	239 057 054 1 33802 057 16 694 7 1925 000										

Table 6.6b. Train	Table 6.6b. Training vs Turnover, 2003-1999 - Longitudinal ANOVA									
	Sum of Squares	df	Mean Square	F	Sig					
Regression	209 210	7	29 887	16 694	000					
Residual	3446 326	1925	1 790							
Total	3655 536	1932								

Table 6.6c. Training vs Turnover, 2003-1999 - Longitudinal Coefficients										
	Unstandardized		Standardized							
	Coefficients	0+1	Coefficients	t	Sig	Correlat	ions	<u> </u>		
	в	Error	Beta			Zero- order	Partial	Part		
(Constant)	026	006		4 678	000					
Percent_Workers_Claiming_Too_	000	000	020	879	380	018	020	019		
Little_Training_for_Job_0399										
Percent_Workers_Claiming_Avail	000	000	033	1 485	138	038	034	033		
ability_Training_Increased_0399										
Average_Expenditure_for_Trainin	000	000	020	875	382	031	020	019		
g_0399										
Proportion_Employees_Receiving_	091	012	190	7 283	000	141	164	161		
Classroom_Training_0399										
Proportion_Employees_Receiving_	050	012	103	4 017	000	136	091	089		
OntheJob_Training_0399										
Sum_Courses_in_Classroom_Form	- 015	002	- 189	-6 721	000	- 075	- 151	- 149		
at_0399										
Sum_Courses_in_OntheJob_Forma	001	002	015	528	597	003	012	012		
t_0399										

6.9. Training and turnover: Longitudinal (differential) Analysis 2005-2001

Tables 6.9a and 6.9.b and 6.9c report the R square, ANOVA, and the regression

coefficients for the 2005-2001 data.

Tabl	Table 6.9a. Training vs Turnover, 2005-2001 - Longitudinal Model Summary										
R	R Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change										
170	R R Square R Square <thr square<="" th=""> R Square <thr sq<="" td=""></thr></thr>										

Table 6.9b. Training vs Turnover, 2005-2001 - Longitudinal ANOVA									
	Sum of Squares	dt	Mean Square	F	Sig				
Regression	97 003	7	13 858	8 091	000				
Residual	3261 001	1904	1 713						
Total	3358 004	1911							

Table 6.9c. Training vs Turnover, 2005-2001 - Longitudinal Coefficients									
	Unstandardized		Standardized		C	Constat			
	Coefficients	Std	Coefficients	t	Sig	Correlati	ons		
	В	Error	Beta			order	Partial	Part	
(Constant)	- 013	005		-2 592	010				
Percent_Workers_Claiming_Too_	000	000	008	336	737	000	008	008	
Little_Training_for_Job_0501									
Percent_Workers_Claiming_Avail	000	000	055	2 403	016	053	055	054	
ability_Training_Increased_0501									
Average_Expenditure_for_Trainin	000	000	- 047	-1 964	050	- 012	- 045	- 044	
g_0501									
Proportion_Employees_Receiving_	041	013	088	3 098	002	095	071	070	
Classroom_Training_0501									
Proportion_Employees_Receiving_	051	010	126	4 915	000	114	112	111	
OntheJob_Training_0501									
Sum_Courses_in_Classroom_Form	- 002	002	- 024	- 871	384	012	- 020	- 020	
at_0501									
Sum_Courses_in_OntheJob_Forma	- 007	002	- 081	-3 221	001	- 037	- 074	- 073	
t_0501									

6.10. Training and turnover: Longitudinal (differential) Analysis 2005-1999

Tables 6.10a and 6.10b and 6.10c report the R square, ANOVA and the regression coefficients for the 2005-1999 data.

Tabl	Table 6.10a. Training vs Turnover, 2005-1999 - Longitudinal Model Summary										
R	R Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change										
251	251 063 060 1 13431 063 17 776 7 1848 000										

Table 6.10b. Training vs Turnover, 2005-1999 - Longitudinal ANOVA									
	Sum of Squares	df	Mean Square	F	Sig				
Regression	160 104	7	22 872	17 776	000				
Residual	2377 739	1848	1 287						
Total	2537 843	1855							

Table 6.10c. Training vs Turnover, 2005-1999 - Longitudinal Coefficients										
	Unstandardized Coefficients		Standardızed Coefficients	t	Sig	Correlations				
	В	Std Error	Beta			Zero- order	Partial	Part		
(Constant)	038	005		8 225	000					
Percent_Workers_Claiming_Too_	000	000	060	2 648	008	054	061	060		
Little_Training_for_Job_0599										
Percent_Workers_Claiming_Avail	000	000	066	2 863	004	086	066	064		
ability_Training_Increased_0599										
Average_Expenditure_for_Trainin	000	000	- 024	- 966	334	009	- 022	- 022		
g_0599										
Proportion_Employees_Receiving_	053	012	120	4 376	000	161	101	099		
Classroom_Training_0599										
Proportion_Employees_Receiving_	065	010	173	6 398	000	170	147	144		
OntheJob_Training_0599										
Sum_Courses_In_Classroom_Form	- 003	002	- 047	-1 703	089	- 012	- 040	- 038		
at_0599										
Sum_Courses_In_OntheJob_Forma	- 007	002	- 111	-3 993	000	- 045	- 092	- 090		
t_0599										

6.11. Training and turnover: Summary of Cross-sectional Analysis and Longitudinal (differential) Analysis

In Table 6.11a we have summarized the cross-sectional data by reporting the (unstandardized) regression coefficient and their associated significance levels. A similar summary is presented in Table 6.11b for the longitudinal (differential) data.

According to the HC theory, the relation between training and turnover depends upon the type of training. An inverse (i.e., signaled by a negative coefficient), relation between training and turnover should be expected when the training received was general in nature, whereas a direct (i.e., signaled by a positive coefficient) relation would be expected when the training received was specific in nature. Many of the training variables considered in the WES, and thus in this study, do not convey the nature of the training; therefore for these variables we focus only on the presence/absence of the relationship.

The training variable first is Percent Workers Claiming Too Little Training for Job, which measures the percentage of employees claiming that the amount of training is too little for the demands of the job. If we assume that the employees' perception is correct, then a large value of this variable signals a lower level of training. From Table 6.11a, it can be seen that the cross-sectional analysis provided no clear evidence for any relation between the employees' perception about the amount of training and turnover. There was a significant effect for 2005, but no effect for 1999, 2001 and 2003. The longitudinal analyses did not provide better results: in fact, there was an effect only for 2001-1999, 2003-2001, and 2005-1999 (see Table 6.11b), but in opposite directions.

The second variable is Percent Workers Claiming Availability Training Increased, which measures the percentage of employees claiming that the availability of training has increased. If we assume that the employees' perception is correct, then a large value of this variable signals a higher level of training. Unfortunately, the cross-sectional and longitudinal analysis produced inconsistent results. In the cross-sectional analysis, there were significant positive effects in 1999, 2003 and 2005, suggesting that increases in availability of training were associated with increases in turnover in those years. Such results would be consistent with the training being general in nature. However, the data are not robust since a significant negative (i.e., inverse) effect was found for the 2001 data. The longitudinal analysis also produced inconsistent results. A significant effect was found in four out of six cases, but in three occasions: 2005-2003; 2005-2001, and 2005-1999, the effect was positive, whereas in one case, 2001-1999, the effect was negative.

The third variable, <u>Average Expenditure for Training</u>, measures the workplace training expenditure per employee. In the cross-sectional analysis, there was a significant and positive effect in all four years indicating that higher training expenditures are associated with higher levels of turnover. However, the results of the longitudinal analysis did not corroborate this observation: a significant effect was observed only for the 2005-2001 data.

The fourth variable is <u>Proportion Employees Receiving Classroom Training</u>, which measures the proportion of employees who received classroom training. If we assume that classroom training provides general training (Bishop, 1991), then we would expect a direct effect of this measure of training and turnover since more general training should result in more turnover. The data seems to confirm this assumption since the data in Table 6.11a and 6.11b indicate that the proportion of classroom training had a direct effect in three out four years in the cross-sectional analysis and in five out of six of the longitudinal analyses.

The fifth variable is <u>Proportion Employees Receiving OntheJob Training</u>, which measures the proportion of employees who received on-the job-training. This quantity appears to be related to turnover: Table 6.11a and 6.11b indicate that the proportion of 'on the job training' had a direct effect in all four cross-sectional analyses and four out of six longitudinal analyses. According to Bishop (1991) on the-job training is typically related to specific training; hence, we should have found an indirect effect of this measure of training and turnover since more specific training should result in less turnover. However, an inspection of the questions in WES used as the basis for this variable reveal that the training considered is actually of a general nature (e.g., managerial/ sales and marketing/team building/problem solving). If so, the data would indeed be consistent with the hypothesis that specific and general training have different effects on turnover.

The sixth variable, <u>Sum Courses in Classroom Format</u>, measures the number of different courses provided in classroom format. The number of classroom courses has a significant and inverse relation with turnover in three out of four cross-sectional and in two out of six of the longitudinal analyses. In the latter case, however, the sign of the coefficients is also negative in all cases, signaling an inverse relation albeit not a significant one. The presence of an inverse relation is apparently inconsistent with the results obtained for the proportion of employees who received classroom training illustrated above. Recall that in that case, it was argued that classroom training provides general training (Bishop, 1991) and therefore should increase turnover. If we were using the same argument in this case, we should have observed a positive and not an inverse relation.

The quantity measured by the variable <u>Sum Courses in OntheJob Format</u>, i.e., the number of different courses offered in the on-the-job format, does not appear to be reliably associated to turnover: only one cross-sectional analysis indicated a significant and negative effect of this factor on turnover. Not much clearer is the scenario offered by the longitudinal analyses: the effect was significant and negative in only three cases out of six.

With respect to the variables measuring classroom and on-the-job training, we note that the variables measuring the proportions of employees taking the courses exhibit a positive relation with turnover, whereas the variables measuring the number of course exhibit a negative (albeit not significant) relation with turnover. This apparent inconsistency could be explained if we distinguish between the availability of a course and the actual attendance. It is possible that offering many courses decreases turnover because people feel they have been offered a choice; however, once the employees decide to attend the courses and therefore gain more general skills, then that training could indeed lead to an increase in turnover.

In summary the data confirm that training can have a strong effect on turnover. However, the nature of this effect is not a simple one.

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Table 6.11a - Training vs Turnover - Summary Cross-sectional Regression Coefficients											
	1999	1999	2001	2001	2003	2003	2005	2005			
	Coefficients		Coefficients		Coefficients		Coefficier	ts			
	B	Sıg	В	Sig	В	Sig	В	Sıg			
		_									
Percent_Workers_Claiming_Too_Little_Training_for_Job	.000	.994	.000	.212	.000	.227	.000	.017			
Percent_Workers_Claiming_Availability_Training_Increased	.000	.023	001	.000	.000	.019	.000	.007			
Average_Expenditure_for_Training	.000	.028	.000	.001	.000	.000	.000	.000			
Proportion_Employees_Receiving_Classroom_Training	078	.000	.035	.052	.056	.000	.042	.002			
Proportion_Employees_Receiving_OntheJob_Training	.143	.000	.145	.000	.099	.000	.238	.000			
Sum_Courses_in_Classroom_Format	.004	.059	007	.026	011	.000	007	.003			
Sum_Courses_in_OntheJob_Format	003	.127	003	.373	.004	.060	014	.000			

Table 6.11b - Training vs Turnover - Summary Longitudinal Regression Coefficients															
		2001- 1999			2003- 2001			2005- 2003			2003- 1999		2005- 2001		2005- 1999
	Coeff			Coeff			Coeff			Coeff		Coeff		Coeff	
	В	Sig		В	Sig		В	Sig		В	Sig	В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training	.001	.000		001	.000		.000	.380		.000	.380	.000	.737	.000	.008
Percent_Workers_Claiming_Availability_Trainin	001	.000		.000	.543		.001	.000		.000	.138	000	.016	.000	.004
Average_Expenditure_for_Training	.000	.997		.000	.489		.000	.272		.000	.382	.000	.050	.000	.334
Proportion_Employees_Receiving_Classroom_Tr	.032	.012		.055	.000		.018	.117		.091	.000	.041	.002	.053	.000
Proportion_Employees_Receiving_OntheJob_Tra	.016	.117		.001	.699		.084	.000		.050	.000	.051	.000	.065	.000
Sum_Courses_in_Classroom_Format	003	.118		009	.000		002	.461		015	.000	002	.384	003	.089
Sum_Courses_in_OntheJob_Format	001	.527		001	.638		009	.000		.001	.597	007	.001	007	.000

7 Chapter: The effect of training on absenteeism

Like turnover, absenteeism can be costly for an organization, particularly when not anticipated. Typically, the work performed by the absentee is either not done or, performed by a co-worker. This can cause resentment in the co-worker compelled to increase his/her workload as a result of his colleagues' absence. While the human capital theory examines turnover, it does not consider absenteeism.

Some studies, albeit limited have examined this relation; the results, however, are not conclusive. Some evidence suggests that training may have a positive effect on absenteeism. Kruger and Rouse (1997) found that in both the service and manufacturing sectors, training reduced the number of unpaid sick leave, whereas Dionne and Dostie (2005) did not find any significant effect of training on leave. These studies used different datasets to examine in one case leave and in the other unpaid leave, and they were also limited in time. A better assessment of the impact of training on absenteeism may require measuring the impact of training on absenteeism over a longer period of time.

In this chapter we will present the results of the cross sectional (i.e., section 7.1 to 7.4) and the longitudinal analyses (i.e., section 7.5 to 7.10) that examined the relationship between training and absenteeism. A summary and discussion of both analyses is provided in section 7.11.

Absenteeism was measured as average of days of paid sick leave (Average Days of Sick Paid Leave); average of days of other paid leave
(<u>Average Days of Other Paid Leave</u>) and average of days of other unpaid leave (<u>Average Days of Unpaid Leave</u>).

With regards to training, we used all the seven training variables which were:

-Percentage of workers claiming that the amount of training available was too little for the demands of the job (*Percent_Workers_Claiming_Too_Little_Training_for_Job*);

-Percentage of workers claiming that the amount of training available to employees has increased (*Percent_Workers_Claiming_Availability_Training_Increased*);

-Average Training Expenditure (<u>Average_Expenditure_for_Training</u>);

-Proportion of employees who received classroom training (*Proportion Employees_Receiving Classroom_Training*);

-Proportion of employees who received on-the job-training (*Proportion_Employees_Receiving_Onthe.Job_Training*);

-Sum of different types of courses provided in classroom format (Sum Courses in Classroom Format)

-Sum of different types of courses provided through on-the job training (Sum_Courses in OntheJob Format).

7.1. Training and absenteeism: Cross-sectional Analysis for 1999

Tables 7.1.1a, 7.1.1b, and 7.1.1c report the R square, ANOVA, and coefficients

for the 1999 *paid sick leave* data.

Tabl	Table 7.1.1a. Training vs Paid Sick Leave, 1999 - Cross-Sectional Model Summary										
R	R R Square R Square of the Estimate R Square Change F Change dfl df2 Sig F Change										
153	024	021	19 93674	024	11 089	7	3223	000			

Table 7.1.1b. Training vs Paid Sick Leave, 1999 - Cross-Sectional ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	30852 488	7	4407 498	11 089	000					
Residual	1281057 363	3223	397 474							
Total	1311909 851	3230								

Table 7.1.1c. Training vs Paid Sick Leave, 1999 - Cross-Sectional Coefficients										
	Unstandardized		Standardized Correlations							
	Coefficients	Std	Coefficients	L	Jig	Zero-		Ι		
	В	Error	Beta			order	Partial	Part		
(Constant)	792	116		6 858	000					
Percent_Workers_Claiming_Too_	004	002	032	1 825	068	019	032	032		
Little_Training_for_Job_99										
Percent_Workers_Claiming_Avail	009	002	090	4 947	000	102	087	086		
ability_Training_Increased_99										
Average_Expenditure_for_Trainin	000	000	040	2 098	036	064	037	037		
g_99										
Proportion_Employees_Receiving_	- 302	185	- 044	-1 629	103	012	- 029	- 028		
Classroom_Training_99										
Proportion_Employees_Receiving_	- 304	171	- 045	-1 774	076	- 038	- 031	- 031		
OntheJob_Training_99										
Sum_Courses_in_Classroom_Form	116	028	112	4 129	000	095	073	072		
at_99										
Sum_Courses_in_OntheJob_Forma	- 030	028	- 027	-1 044	296	024	- 018	- 018		
t_99										

Tables 7.1.2a, 7.1.2b, and 7.1.2c report the R square, ANOVA, and coefficients

for the 1999 other paid leave data.

Tabl	Table 7.1.2a. Training vs Other Paid Leave, 1999 - Cross-Sectional Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change			
160	026	023	14 45225	026	12 074	7	3223	000			

Table 7.1.2a. Training vs Other Paid Leave, 1999 - Cross-Sectional ANOVA										
Sum of Squares df Mean Square F Sig										
Regression	17653 539	7	2521 934	12 074	000					
Residual	673179 738	3223	208 867							
Total 690833 277 3230										

Table 7.1.2c. Training vs	Other Paid J	Leave,	1999 - Cros	ss-Secti	ional (Coeffic	ients	
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions	
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	273	084		3 255	001			
Percent_Workers_Claiming_Too_	002	001	023	1 308	191	010	023	023
Little_Training_for_Job_99								
Percent_Workers_Claiming_Avail	006	001	077	4 239	000	099	074	074
ability_Training_Increased_99								
Average_Expenditure_for_Trainin	000	000	016	847	397	061	015	015
g_99								
Proportion_Employees_Receiving_	034	134	007	254	799	055	004	004
Classroom_Training_99								
Proportion_Employees_Receiving_	- 286	124	- 058	-2 305	021	- 016	- 041	- 040
OntheJob_Training_99				1				
Sum_Courses_in_Classroom_Form	093	020	124	4 584	000	128	080	080
at_99								
Sum_Courses_in_OntheJob_Forma	- 010	021	- 012	- 464	642	047	- 008	- 008
t_99								

Tables 7.1.3a, 7.1.3b, and 7.1.3c report the R square, ANOVA, and coefficients

for the 1999 *unpaid leave* data.

Tabl	Table 7.1.3a. Training vs Unpaid Leave, 1999 - Cross-Sectional Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
083	007	005	38 71458	007	3 206	7	3222	002			

Table 7.1.3b. Training vs Unpaid Leave, 1999 – Cross-Sectional ANOVA											
Sum of Squares df Mean Square F S1g											
Regression	33635 114	7	4805 016	3 206	002						
Residual	4829194 883	3222	1498 819								
Total	Total 4862829 997 3229										

Table 7.1.3c. Training vs	s Unpaid Lea	ve, 199	9 - Cross-S	Sectiona	al Coe	fficient	S	
	Unstandardized		Standardized Coefficients	_t	Sig	Correlat	ions	
		Std	Coefficients			Zero-		r
	В	Error	Beta	[order	Partial	Part
(Constant)	2 780	224		12 389	000	-		
Percent_Workers_Claiming_Too_	000	004	- 001	- 049	961	- 003	- 001	- 001
Little_Training_for_Job_99								
Percent_Workers_Claiming_Avail	000	004	002	118	906	- 013	002	002
ability_Training_Increased_99								
Average_Expenditure_for_Trainin	- 001	000	- 051	-2 667	008	- 066	- 047	- 047
g_99				-				
Proportion_Employees_Receiving_	- 205	360	- 015	- 570	569	- 054	- 010	- 010
Classroom_Training_99								
Proportion_Employees_Receiving_	- 168	333	- 013	- 504	614	- 019	- 009	- 009
OntheJob_Training_99								
Sum_Courses_in_Classroom_Form	- 100	055	- 050	-1 818	069	- 048	- 032	- 032
at_99				ŗ				
Sum_Courses_in_OntheJob_Forma	112	057	052	1 990	047	001	035	035
t_99								
1	1	1	1	1	1	1	1	1

7.2. Training and absenteeism: Cross-sectional Analysis for 2001

Tables 7.2.1a, 7.2.1b, and 7.2.1c report the R square, ANOVA, and coefficients

for the 2001 *paid sick leave* data.

Tabl	Table 7.2.1a. Training vs Paid Sick Leave, 2001 - Cross-Sectional Model Summary										
R	Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change										
161	026	024	18 24564	026	11 434	7	3026	000			

Table 7.2.1b. Training vs Paid Sick Leave, 2001 – Cross-Sectional ANOVA										
Sum of Squares dt Mean Square F Sig										
Regression	26644 061	7	3806 294	11 434	000					
Residual	1007366 130	3026	332 904							
Total	Total 1034010 191 3033									

Table 7.2.1c. Training vs	Paid Sick L	eave, 2	001 - Cross	s-Sectio	onal C	oefficie	ents			
	Unstandardized		Standardized	red to Sig Correlations						
	Coefficients	Std	Coefficients		Jug	Zero				
	в	Error	Beta			order	Partial	Part		
(Constant)	611	086		7 072	000					
Percent_Workers_Clauming_Too_	007	002	067	3 675	000	076	067	066		
Little_Training_for_Job_01										
Percent_Workers_Claiming_Avail	008	002	097	5 317	000	109	096	095		
ability_Training_Increased_01										
Average_Expenditure_for_Trainin	000	000	039	1 938	053	086	035	035		
g_01										
Proportion_Employees_Receiving_	074	152	012	487	626	079	009	009		
Classroom_Training_01										
Proportion_Employees_Receiving_	- 011	049	- 004	- 230	818	017	- 004	- 004		
OntheJob_Training_01										
Sum_Courses_in_Classroom_Form	037	027	038	1 369	171	101	025	025		
at_01										
Sum_Courses_in_OntheJob_Forma	024	025	023	994	320	082	018	018		
t_01										
I	1	1	1	1	1	1	1	1		

Tables 7.2.2a, 7.2.2b, and 7.2.2c report the R square, ANOVA, and coefficients

for the 2001 other paid leave data.

Tabl	Table 7.2.2a. Training vs Other Paid Leave, 2001 - Cross-Sectional Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
093	009	006	25 48561	009	3 759	7	3024	000			

Table 7.2.2b. Training vs Other Paid Leave, 2001 – Cross-Sectional ANOVA										
Sum of Squares df Mean Square F S1g										
Regression	17089 873	7	2441 410	3 759	000					
Residual	1964137 437	3024	649 516							
Total 1981227 310 3031										

Table 7.2.2c. Training vs Other Paid Leave, 2001 - Cross-Sectional Coefficients										
	Unstandardized		Standardized	t	Sig	Correlat	1005			
	Coefficients	Std	Coefficients	ι	Jig	Zero-		1		
	В	Error	Beta			order	Partial	Part		
(Constant)	798	123		6 468	000					
Percent_Workers_Claiming_Too_	001	003	007	404	686	016	007	007		
Little_Training_for_Job_01										
Percent_Workers_Claiming_Avail	003	002	029	1 565	118	040	028	028		
ability_Training_Increased_01										
Average_Expenditure_for_Trainin	000	000	039	1 891	059	063	034	034		
g_01										
Proportion_Employees_Receiving_	118	217	013	544	586	050	010	010		
Classroom_Training_01	1									
Proportion_Employees_Receiving_	- 313	149	- 044	-2 093	036	- 007	- 038	- 038		
OntheJob_Training_01										
Sum_Courses_in_Classroom_Form	030	038	022	774	439	069	014	014		
at_01										
Sum_Courses_in_OntheJob_Forma	062	037	043	1 689	091	056	031	031		
t_01										

Tables 7.2.3a, 7.2.3b, and 7.2.3c report the R square, ANOVA, and coefficients

for the 2001 *unpaid leave* data.

Tabl	Table 7.2.3a. Training vs Unpaid Leave, 2001 - Cross-Sectional Model Summary											
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change				
092	008	006	34 53187	008	3 679	7	3024	001				

Table 7.2.3b. Training vs Unpaid Leave, 2001 – Cross-Sectional ANOVA											
	Sum of Squares	df	Mean Square	F	Sıg						
Regression	30705 877	7	4386 554	3 679	001						
Residual	3605969 120	3024	1192 450								
Total	3636674 997	3031									

Table 7.2.3c. Training vs Unpaid Leave, 2001 - Cross-Sectional Coefficients										
	Unstandardized		Standardized		0	0.1				
	Coefficients	643	Coefficients	ι	51g	Correlat				
	в	Error	Beta			order	Partial	Part		
(Constant)	2 053	166		12 368	000					
Percent_Workers_Claiming_Too_	- 006	004	- 033	-1 789	074	- 041	- 033	- 032		
Little_Training_for_Job_01										
Percent_Workers_Claiming_Avail	007	003	046	2 487	013	043	045	045		
ability_Training_Increased_01		l								
Average_Expenditure_for_Trainin	000	000	- 047	-2 286	022	- 039	- 042	- 041		
g_01										
Proportion_Employees_Receiving_	841	294	070	2 861	004	019	052	052		
Classroom_Training_01										
Proportion_Employees_Receiving_	- 352	202	- 037	-1 741	082	- 020	- 032	- 032		
OntheJob_Training_01										
Sum_Courses_in_Classroom_Form	- 116	052	- 064	-2 230	026	- 023	- 041	- 040		
at_01										
Sum_Courses_in_OntheJob_Forma	074	050	038	1 485	138	- 006	027	027		
t_01										

7.3. Training and absenteeism: Cross-sectional Analysis for 2003

Tables 7.3.1a, 7.3.1b, and 7.3.1c report the R square, ANOVA, and coefficients

for the 2003 *paid sick leave* data.

Tabl	Table 7.3.1a. Training vs Paid Sick Leave, 2003 - Cross-Sectional Model Summary										
R	Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change										
138	019	017	21 04247	019	8 618	7	3096	000			

Table 7.3.1b.	Training vs Paid Si	ck Leave, 20)03 – Cross-Sectio	nal ANOVA	Ι	
	Sum of Squares	df	Mean Square	F	Sig	
Regression	26710 736	7	3815 819	8 618	000	
Residual	1370863 773	3096	442 785			
Total	1397574 509	3103				

Table 7.3.1c. Training vs	Paid Sick L	eave, 2	003 - Cross	s-Sectio	onal C	oefficie	ents				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	Correlations				
	в	Std Error	Beta			Zero- order	Partial	Part			
(Constant)	709	102		6 966	000						
Percent_Workers_Claiming_Too_	006	002	051	2 865	004	051	051	051			
Little_Training_for_Job_03											
Percent_Workers_Claiming_Avail	008	002	086	4 636	000	103	083	083			
ability_Training_Increased_03											
Average_Expenditure_for_Trainin	000	000	044	2 105	035	077	038	037			
g_03											
Proportion_Employees_Receiving_	- 069	153	- 014	- 451	652	034	- 008	- 008			
Classroom_Training_03											
Proportion_Employees_Receiving_	- 023	144	- 005	- 162	871	024	- 003	- 003			
OntheJob_Training_03											
Sum_Courses_in_Classroom_Form	043	033	037	1 299	194	090	023	023			
at_03											
Sum_Courses_in_OntheJob_Forma	028	033	022	829	407	071	015	015			
t_03											

Tables 7.3.2a, 7.3.2b, and 7.3.2c report the R square, ANOVA, and coefficients

for the 2003 *other paid leave* data.

Tabl	Table 7.3.2a. Training vs Other Paid Leave, 2003 - Cross-Sectional Model Summary										
		Adjusted	Std Error								
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change			
141	020	018	35 31332	020	8 915	7	3093	000			
	l										

Table 7.3.2b. Training vs Other Paid Leave, 2003 – Cross-Sectional ANOVA											
Sum of Squares df Mean Square F Sig											
Regression	77821 527	7	11117 361	8 915	000						
Residual	3857064 833	3093	1247 030								
Total	Total 3934886 361 3100										

Table 7.3.2c. Training vs	o Other Paid	Leave,	2003 - Cros	ss-Secti	ional (Coeffic	ients	
	Unstandardized Coefficients		Standardized Coefficients	t	S1g	Correlat	ions	
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	898	175		5 135	000			
Percent_Workers_Claiming_Too_	- 002	004	- 008	- 434	665	- 008	- 008	- 008
Little_Training_for_Job_03								
Percent_Workers_Claiming_Avail	010	003	057	3 076	002	072	055	055
ability_Training_Increased_03								
Average_Expenditure_for_Trainin	000	000	- 029	-1 406	160	032	- 025	- 025
g_03								
Proportion_Employees_Receiving_	1 530	298	127	5 135	000	122	092	091
Classroom_Training_03								
Proportion_Employees_Receiving_	- 089	266	- 008	- 336	737	041	- 006	- 006
OntheJob_Training_03								
Sum_Courses_in_Classroom_Form	051	058	026	883	377	073	016	016
at_03								
Sum_Courses_in_OntheJob_Forma	- 090	056	- 042	-1 611	107	014	- 029	- 029
t_03								

Tables 7.3.3a, 7.3.3b, and 7.3.3c report the R square, ANOVA, and coefficients

for the 2003 *unpaid leave* data.

Tabl	Table 7.3.3a. Training vs Unpaid Leave, 2003 - Cross-Sectional Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change			
123	015	013	27 25551	015	6 829	7	3093	000			

Table 7.3.3b. Training vs Unpaid Leave, 2003 – Cross-Sectional ANOVA										
	Sum of Squares df Mean Square F Sig									
Regression	35511 989	7	5073 141	6 829	000					
Residual	2297674 383	3093	742 863							
Total	2333186 371	3100								

Table 7.3.3c. Training vs	Unpaid Lea	ve, 200	3 - Cross-S	lectiona	al Coe	fficient	S	
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions	
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	- 006	003	- 038	-2 100	036	- 033	- 038	- 037
Percent_Workers_Claiming_Too_	- 014	002	- 108	-5 773	000	- 097	- 103	- 103
Little_Training_for_Job_03								
Percent_Workers_Claiming_Avail	000	000	- 021	-1 023	306	- 018	- 018	- 018
ability_Training_Increased_03								
Average_Expenditure_for_Trainin	016	230	002	070	944	011	001	001
g_03						:		
Proportion_Employees_Receiving_	659	205	072	3 212	001	045	058	057
Classroom_Training_03								
Proportion_Employees_Receiving_	038	045	025	855	393	- 011	015	015
OntheJob_Training_03								
Sum_Courses_in_Classroom_Form	- 050	043	- 030	-1 154	249	- 008	- 021	- 021
at_03								
Sum_Courses_in_OntheJob_Forma	- 006	003	- 038	-2 100	036	- 033	- 038	- 037
t_03								

7.4. Training and absenteeism: Cross-sectional Analysis for 2005

Tables 7.4.1a, 7.4.1b, and 7.4.1c report the R square, ANOVA, and coefficients

for the 2005 *paid sick leave* data.

Tabl	Table 7.4.1a. Training vs Paid Sick Leave, 2005 - Cross-Sectional Model Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
177	031	029	14 11599	031	16 183	7	3513	000		

Table 7.4.1b. Training vs Paid Sick Leave, 2005 – Cross-Sectional ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	22572 039	7	3224 577	16 183	000					
Residual	700004 536	3513	199 261							
Total	722576 576	3520								

Table 7.4.1c. Training vs	Paid Sick L	eave, 2	005 - Cross	s-Sectio	nal C	oefficie	ents	
	Unstandardized		Standardized		0	0		
	Coefficients	Std	Coefficients	ι —	Sig	Zero	lons	·····
	В	Error	Beta			order	Partial	Part
(Constant)	818	064		12 832	000			
Percent_Workers_Claiming_Too_	004	001	052	3 139	002	057	053	052
Little_Training_for_Job_05								
Percent_Workers_Claiming_Avail	002	001	034	1 952	051	080	033	032
ability_Training_Increased_05								
Average_Expenditure_for_Trainin	000	000	031	1 561	119	103	026	026
g_05						- - -		
Proportion_Employees_Receiving_	- 066	100	- 019	- 662	508	060	- 011	- 011
Classroom_Training_05						2 2 2 2 2		
Proportion_Employees_Receiving_	047	092	015	514	607	056	009	009
OntheJob_Training_05								
Sum_Courses_in_Classroom_Form	081	020	103	3 979	000	156	067	066
at_05					:			
Sum_Courses_In_OntheJob_Forma	041	020	049	2 027	043	134	034	034
t_05								

Tables 7.4.2a, 7.4.2b, and 7.4.2c report the R square, ANOVA, and coefficients

for the 2005 other paid leave data.

Table 7.4.2a. Training vs Other Paid Leave, 2005 - Cross-Sectional Model Summary										
Adjusted Std Error										
R R Square R Square of the Estimate R Square Change F Change df1 df2	Sig F Change									
143 021 019 30 83642 021 10 528 7 3512	000									

Table 7.4.2b. Training vs Other Paid Leave, 2005 – Cross-Sectional ANOVA										
	Sum of Squares	df	Mean Square	F	Sıg					
Regression	70078 282	7	10011 183	10 528	000					
Residual	3339507 316	3512	950 885							
Total	3409585 598	3519								

Table 7.4.2c. Training vs Other Paid Leave, 2005 - Cross-Sectional Coefficients										
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions			
	В	Std Error	Beta			Zero- order	Partial	Part		
(Constant)	721	139		5 178	000					
Percent_Workers_Claiming_Too_	- 003	003	- 019	-1 122	262	- 012	- 019	- 019		
Little_Training_for_Job_05										
Percent_Workers_Claiming_Avail	- 002	003	- 014	- 794	427	018	- 013	- 013		
ability_Training_Increased_05										
Average_Expenditure_for_Trainin	001	000	137	6 965	000	136	117	116		
g_05										
Proportion_Employees_Receiving_	- 498	218	- 067	-2 279	023	026	- 038	- 038		
Classroom_Training_05										
Proportion_Employees_Receiving_	358	200	052	1 788	074	027	030	030		
OntheJob_Training_05										
Sum_Courses_in_Classroom_Form	072	045	042	1 605	109	080	027	027		
at_05										
Sum_Courses_in_OntheJob_Forma	- 034	045	- 019	- 769	442	052	- 013	- 013		
t_05										

Tables 7.4.3a, 7.4.3b, and 7.4.3c report the R square, ANOVA, and coefficients

for the 2005 *unpaid leave* data.

Table 7.4.3a. Training vs Unpaid Leave, 2005 - Cross-Sectional Model Summary										
		Adjusted	Std Error							
R	R Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
118	014	012	33 14916	014	7 042	7	3509	000		

Table 7.4.3b. Training vs Unpaid Leave, 2005 – Cross-Sectional ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	54167 536	7	7738 219	7 042	000					
Residual	3855924 256	3509	1098 867							
Total	3910091 792	3516								

Table 7.4.3c. Training vs	Table 7.4.3c. Training vs Unpaid Leave, 2005 - Cross-Sectional Coefficients									
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions			
	В	Std Error	Beta			Zero- order	Partial	Part		
(Constant)	3 155	151		20 900	000					
Percent_Workers_Claiming_Too_	- 017	003	- 085	-5 085	000	- 086	- 086	- 085		
Little_Training_for_Job_05										
Percent_Workers_Claiming_Avail	- 007	003	- 041	-2 319	020	- 043	- 039	- 039		
ability_Training_Increased_05										
Average_Expenditure_for_Trainin	- 001	000	- 060	-3 050	002	- 061	- 051	- 051		
g_05										
Proportion_Employees_Receiving_	- 221	236	- 028	- 935	350	- 032	- 016	- 016		
Classroom_Training_05										
Proportion_Employees_Receiving_	106	216	014	490	624	- 008	008	008		
OntheJob_Training_05										
Sum_Courses_in_Classroom_Form	016	048	009	342	732	- 021	006	006		
at_05										
Sum_Courses_in_OntheJob_Forma	075	048	039	1 574	116	012	027	026		
t_05										

7.5. Training and absenteeism: Longitudinal (differential) Analysis 2001-1999

The following sections provide the results for the longitudinal analyses. Tables 7.5.1a, 7.5.1b and 7.5.1c report the R square, ANOVA and regression coefficients with regards to *paid sick leave* for the 2001-1999 data.

Tabl	Table 7.5.1a. Training vs Paid Sick Leave, 2001-1999-Longitudinal Model Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
113	013	010	22 56655	013	4 124	7	2245	000		

Table 7.5.1b. Training vs Paid Sick Leave, 2001-1999-Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	14699 367	7	2099 910	4 124	000					
Residual	1143264 408	2245	509 249							
Total	1157963 775	2252								

Table 7.5.1c. Training vs	Paid Sick L	eave, 2	001-1999 -	Longitu	ıdinal	Coeffi	cients	
	Unstandardized		Standardized		0	Gunta		
	Coefficients	Std	Coefficients	I	Sig	Zero-	ions	
	в	Error	Beta			order	Partial	Part
(Constant)	- 105	083		-1 262	207			
Percent_Workers_Claiming_Too_	001	002	010	464	643	004	010	010
Little_Training_for_Job_0199								
Percent_Workers_Claiming_Availa	010	002	094	4 433	000	097	093	093
bility_Training_Increased_0199								
Average_Expenditure_for_Trainin	000	000	030	1 348	178	023	028	028
g_0199								
Proportion_Employees_Receiving_	- 244	165	- 035	-1 482	138	- 024	- 031	- 031
Classroom_Training_0199								
Proportion_Employees_Receiving_	037	064	013	580	562	014	012	012
OntheJob_Training_0199								
Sum_Courses_In_Classroom_Form	- 002	032	- 001	- 053	958	004	- 001	- 001
at_0199								
Sum_Courses_In_OntheJob_Forma	050	029	041	1 708	088	044	036	036
t_0199								

Tables 7.5.2a, 7.5.2b and 7.5.2c report the R square, ANOVA and regression

coefficients for the other paid leave 2001-1999 data.

Tabl	Table 7.5.2a. Training vs Other Paid Leave, 2001-1999 - Longitudinal Model Summary									
D	DC	Adjusted	Std Error		E CI	10	100			
K	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	dt2	Sig F Change		
047	002	- 001	29 78376	002	724	7	2243	652		

Table 7.5.2b. Training vs Other Paid Leave, 2001-1999 - Longitudinal ANOVA										
Sum of Squares df Mean Square F S1g										
Regression	4495 894	7	642 271	724	652					
Residual	1989703 267	2243	887 072							
Total	1994199 162	2250								

Table 7.5.2c. Training vs	Other Paid I	Leave,	2001-1999	- Longi	tudina	al Coef	ficients	5
	Unstandardized		Standardized	+	Sig	Correlat	1000	
	Coefficients	Std	Coefficients	ι 	loig	Zero-		T
	В	Error	Beta			order	Partial	Part
(Constant)	568	110		5 172	000			
Percent_Workers_Claiming_Too_	- 001	003	- 007	- 343	731	- 009	- 007	- 007
Little_Training_for_Job_0199								
Percent_Workers_Claiming_Availa	004	003	028	1 319	187	026	028	028
bility_Training_Increased_0199								
Average_Expenditure_for_Trainin	000	000	024	1 092	275	025	023	023
g_0199								
Proportion_Employees_Receiving_	- 159	234	- 018	- 680	496	- 002	- 014	- 014
Classroom_Training_0199								
Proportion_Employees_Receiving_	- 001	199	000	- 007	995	- 007	000	000
OntheJob_Training_0199								
Sum_Courses_in_Classroom_Form	055	043	033	1 261	207	020	027	027
at_0199								
Sum_Courses_in_OntheJob_Forma	- 033	042	- 020	- 789	430	- 005	- 017	- 017
t_0199								

Tables 7.5.3a, 7.5.3b and 7.5.3c report the R square, ANOVA and regression

coefficients for the *unpaid leave* 2001-1999 data.

Tabl	Table 7.5.3a. Training vs Unpaid Leave, 2001-1999 - Longitudinal Model Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
144	021	018	47 16852	021	6 797	7	2244	000		

Table 7.5.3b. Training vs Unpaid Leave, 2001-1999 Longitudinal ANOVA										
Sum of Squares df Mean Square F Sig										
Regression	105857 370	7	15122 481	6 797	000					
Residual	4992606 923	2244	2224 869							
Total	5098464 293	2251								

Table 7.5.3c. Training vs	Unpaid Lea	ve, 200)1-1999 - L	ongitudi	inal C	oeffici	ents	
	Unstandardized		Standardized	t	Sig	Correlat	1005	
	Coefficients	Std	Coefficients		Sig	Zero-		
	В	Error	Beta			order	Partial	Part
(Constant)	- 588	173		-3 396	001			
Percent_Workers_Claiming_Too_	017	005	072	3 4 1 4	001	075	072	071
Little_Training_for_Job_0199		1						
Percent_Workers_Claiming_Availa	004	005	016	769	442	020	016	016
bility_Training_Increased_0199								_
Average_Expenditure_for_Trainin	000	000	005	235	814	- 007	005	005
g_0199								
Proportion_Employees_Receiving_	640	370	044	1 727	084	- 011	036	036
Classroom_Training_0199								
Proportion_Employees_Receiving_	-1 410	315	- 110	-4 482	000	- 060	- 094	- 094
OntheJob_Training_0199								
Sum_Courses_In_Classroom_Form	- 212	068	- 081	-3 090	002	- 013	- 065	- 065
at_0199								
Sum_Courses_in_OntheJob_Forma	319	065	124	4 904	000	064	103	102
t_0199								

7.6. Training and absenteeism: Longitudinal (differential) Analysis 2003-2001

Tables 7.6.1a, 7.6.1b and 7.6.1c report the R square, ANOVA and regression

coefficients for the *paid sick leave* 2003-2001 data.

Tabl	Table 7.6.1a. Training vs Paid Sick Leave, 2003-2001 - Longitudinal Model Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
066	004	001	27 27632	004	1 269	7	2033	262		

Table 7.6.1b. Training vs Paid Sick Leave, 2003-2001 – Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sıg					
Regression	6607 482	7	943 926	1 269	262					
Residual	1512547 489	2033	743 998							
Total	1519154 971	2040								

Table 7.6.1c. Training vs	Paid Sick Lo	eave, 2	003-2001 -	Longitu	ıdinal	Coeffi	cients	
	Unstandardized		Standardized	t	Sig	Correlat	10.005	
	Coenteients	Std	Coefficients		Sig	Zero-		l
	В	Error	Beta			order	Partial	Part
(Constant)	088	098		902	367			
Percent_Workers_Claiming_Too_	- 003	003	- 020	- 895	371	- 024	- 020	- 020
Little_Training_for_Job_0301			c .			1		
Percent_Workers_Claiming_Availa	001	003	010	434	664	010	010	010
bility_Training_Increased_0301								
Average_Expenditure_for_Trainin	000	000	- 002	- 079	937	- 001	- 002	- 002
g_0301								
Proportion_Employees_Receiving_	361	250	037	1 445	149	008	032	032
Classroom_Training_0301								
Proportion_Employees_Receiving_	- 003	076	- 001	- 043	966	007	- 001	- 001
OntheJob_Training_0301								
Sum_Courses_In_Classroom_Form	- 112	044	- 067	-2 525	012	- 038	- 056	- 056
at_0301								
Sum_Courses_in_OntheJob_Forma	076	044	041	1 740	082	023	039	039
t_0301								

Tables 7.6.2a, 7.6.2b and 7.6.2c report the R square, ANOVA and regression

coefficients for the *other paid leave* 2003-2001 data.

Tabl	Table 7.6.2a. Training vs Other Paid Leave, 2003-2001 - Longitudinal Model Summary										
p	R Square	Adjusted R Square	Std Error	R Square Change	F Change	dfl	df7	Sig E Change			
047	002		38 50216		656	7	2022	710			
047	002	- 001	38 30210	002	050	/	2032	/10			

Table 7.6.2b. Training vs Other Paid Leave, 2003-2001- Longitudinal ANOVA											
	Sum of Squares	df	Mean Square	F	Sig						
Regression	6804 239	7	972 034	656	710						
Residual	3012270 660	2032	1482 417	-							
Total	Total 3019074 899 2039										

Table 7.6.2c. Training vs Other Paid Leave, 2003-2001 - Longitudinal Coefficients										
	Unstandardized CoefficientsStandardized CoefficientsStandardized tSigCorrelations									
	В	Std Error	Beta			Zero- order	Partial	Part		
(Constant)	445	138		3 215	001					
Percent_Workers_Claiming_Too_	002	004	013	561	575	014	012	012		
Little_Training_for_Job_0301										
Percent_Workers_Claiming_Availa	- 002	004	- 014	- 611	542	- 012	- 014	- 014		
bility_Training_Increased_0301										
Average_Expenditure_for_Trainin	000	000	- 009	- 413	679	- 009	- 009	- 009		
g_0301										
Proportion_Employees_Receiving_	- 462	353	- 033	-1 309	191	- 015	- 029	- 029		
Classroom_Training_0301										
Proportion_Employees_Receiving_	042	107	009	394	694	008	009	009		
OntheJob_Training_0301										
Sum_Courses_in_Classroom_Form	087	063	037	1 381	167	026	031	031		
at_0301										
Sum_Courses_in_OntheJob_Forma	034	061	013	551	582	023	012	012		
t_0301										

Tables 7.6.3a, 7.6.3b and 7.6.3c report the R square, ANOVA and regression

coefficients for the *unpaid leave* 2003-2001 data.

Table 7.6.3a. Training vs Unpaid Leave, 2003-2001 - Longitudinal Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
056	003	000	30 98087	003	903	7	2032	503		

Table 7.6.3b. Training vs Unpaid Leave, 2003-2001 - Longitudinal ANOVA										
Sum of Squares Df Mean Square F Sig										
Regression	6065 231	7	866 462	903	503					
Residual	1950342 461	2032	959 814			i.				
Total 1956407 692 2039										

Table 7.6.3c. Training vs	Unpaid Lea	ve, 200	3-2001 - L	ongitudi	nal C	oeffici	ents	
	Unstandardized		Standardized					
	Coefficients	644	Coefficients	t	Sig	Correlat	ions	
	В	Error	Beta			order	Partial	Part
(Constant)	- 108	111		- 967	334			
Percent_Workers_Claiming_Too_	- 003	003	- 021	- 942	347	- 019	- 021	- 021
Little_Training_for_Job_0301								
Percent_Workers_Claiming_Availa	002	003	017	771	441	020	017	017
bility_Training_Increased_0301								
Average_Expenditure_for_Trainin	000	000	- 025	-1 090	276	- 017	- 024	- 024
g_0301								
Proportion_Employees_Receiving_	166	285	015	585	559	021	013	013
Classroom_Training_0301								
Proportion_Employees_Receiving_	025	086	007	294	769	010	007	007
OntheJob_Training_0301								
Sum_Courses_in_Classroom_Form	047	050	025	929	353	033	021	021
at_0301					,			
Sum_Courses_in_OntheJob_Forma	047	049	023	953	340	032	021	021
t_0301								
	1)	1	1	1	1	1	1

7.7. Training and absenteeism: Longitudinal (differential) Analysis 2005-2003

Tables 7.7.1a, 7.7.1b and 7.7.1c report the R square, ANOVA and regression

coefficients for the *paid sick leave* 2005-2003 data.

Table 7.7.1a. Training vs Paid Sick Leave, 2005-2003 - Longitudinal Model Summary											
R	Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change										
061	004	001	18 20451	004	1 185	7	2206	308			

Table 7.7.1b. Training vs Paid Sick Leave, 2005-2003 – Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	2748 396	7	392 628	1 185	308					
Residual	731077 592	2206	331 404							
Total	733825 989	2213								

Table 7.7.1c. Training vs	Paid Sick Le	eave, 2	005-2003 -	Longitu	ıdinal	Coeffi	cients	
	Unstandardized		Standardized		Sig	Correlati	075	
	Coefficients	Std	Coefficients			Zero-		
	В	Error	Beta			order	Partial	Part
(Constant)	335	063		5 352	000			
Percent_Workers_Claiming_Too_	- 003	002	- 027	-1 268	205	- 025	- 027	- 027
Little_Training_for_Job_0503								
Percent_Workers_Claiming_Availa	- 002	002	- 022	-1 006	315	- 015	- 021	- 021
bility_Training_Increased_0503								
Average_Expenditure_for_Trainin	000	000	- 027	-1 234	217	- 033	- 026	- 026
g_0503								
Proportion_Employees_Receiving_	- 154	170	- 023	- 909	363	- 036	- 019	- 019
Classroom_Training_0503								
Proportion_Employees_Receiving_	- 103	147	- 016	- 698	485	- 032	- 015	- 015
OntheJob_Training_0503								
Sum_Courses_in_Classroom_Form	- 002	030	- 002	- 072	942	- 024	- 002	- 002
at_0503								
Sum_Courses_In_OntheJob_Forma	- 020	030	- 015	- 654	513	- 027	- 014	- 014
t_0503								

Tables 7.7.2a, 7.7.2b and 7.7.2c report the R square, ANOVA and regression

coefficients for the other paid leave 2005-2003 data.

Table 7.7.2a. Training vs Other Paid Leave, 2005-2003 - Longitudinal Model Summary											
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
125	016	013	40 52115	016	4 998	7	2202	000			

Table 7.7.2b. Training vs Other Paid Leave, 2005-2003- Longitudinal ANOVA											
	Sum of Squares	df	Mean Square	F	Sig						
Regression	57441 675	7	8205 954	4 998	000						
Residual	3615604 505	2202	1641 964								
Total	Total 3673046180 2209										

Table 7.7.2c. Training vs Other Paid Leave, 2005-2003 - Longitudinal Coefficients										
	Unstandardized Standardized Coefficients t Sig Correlations									
	В	Std Error	Beta			Zero- order	Partial	Part		
(Constant)	- 616	141		-4 377	000					
Percent_Workers_Claiming_Too_	- 014	004	- 068	-3 151	002	- 053	- 067	- 067		
Little_Training_for_Job_0503										
Percent_Workers_Claiming_Availa	- 014	004	- 085	-3 945	000	- 074	- 084	- 083		
bility_Training_Increased_0503										
Average_Expenditure_for_Trainin	- 001	000	- 034	-1 554	120	- 008	- 033	- 033		
g_0503										
Proportion_Employees_Receiving_	984	391	062	2 519	012	064	054	053		
Classroom_Training_0503										
Proportion_Employees_Receiving_	- 121	332	- 008	- 364	716	007	- 008	- 008		
OntheJob_Training_0503										
Sum_Courses_in_Classroom_Form	045	069	017	662	508	045	014	014		
at_0503										
Sum_Courses_in_OntheJob_Forma	067	068	023	985	325	034	021	021		
t_0503										

Tables 7.7.3a, 7.7.3b and 7.7.3c report the R square, ANOVA and regression

coefficients for the *unpaid leave* 2005-2003 data.

Tabl	Table 7.7.3a. Training vs Unpaid Leave, 2005-2003 - Longitudinal Model Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
211	045	042	33 33836	045	14 748	7	2205	000		

Table 7.7.3b. Training vs Unpaid Leave, 2005-2003 - Longitudinal ANOVA											
Sum of Squares df Mean Square F Sig											
Regression	114737 566	7	16391 081	14 748	000						
Residual	2450739 653	2205	1111 447								
Total	Total 2565477 219 2212										

Table 7.7.3c. Training vs Unpaid Leave, 2005-2003 - Longitudinal Coefficients											
	Unstandardized Coefficients		Standardized Coefficients	t	t Sig Correlations						
	В	Std Error	Beta			Zero- order	Partial	Part			
(Constant)	174	115		1 516	130						
Percent_Workers_Claiming_Too_	010	004	057	2 669	008	082	057	056			
Little_Training_for_Job_0503											
Percent_Workers_Claiming_Availa	- 020	003	- 146	-6 918	000	- 154	- 146	- 144			
bility_Training_Increased_0503											
Average_Expenditure_for_Trainin	- 001	000	- 059	-2 721	007	- 025	- 058	- 057			
g_0503											
Proportion_Employees_Receiving_	485	311	038	1 559	119	060	033	032			
Classroom_Training_0503											
Proportion_Employees_Receiving_	- 250	270	- 021	- 927	354	020	- 020	- 019			
OntheJob_Training_0503											
Sum_Courses_in_Classroom_Form	155	056	069	2 780	005	093	059	058			
at_0503		}									
Sum_Courses_in_OntheJob_Forma	182	055	076	3 282	001	101	070	068			
t_0503											

7.8. Training and absenteeism: Longitudinal (differential) Analysis 2003-1999

Tables 7.8.1a, 7.8.1b and 7.8.1c report the R square, ANOVA and regression

coefficients for the *paid sick leave* 2003-1999 data.

Tabl	Table 7.8.1a. Training vs Paid Sick Leave, 2003-1999 - Longitudinal Model Summary										
R	Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change dfl df2 Sig F Change										
102	010	007	20 53046	010	2 919	7	1927	005			

Table 7.8.1b. Training vs Paid Sick Leave, 2003-1999 – Longitudinal ANOVA										
Sum of Squares df Mean Square F Sig										
Regression	8612 275	7	1230 325	2 919	005					
Residual	812229 762	1927	421 500							
Total	820842 037	1934								

Table 7.8.1c. Training vs	Paid Sick Lo	eave, 2	003-1999 -	Longitu	ıdinal	Coeffi	cients	
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions	
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	009	084		110	913			
Percent_Workers_Claiming_Too_	009	003	076	3 299	001	076	075	075
Little_Training_for_Job_0399								
Percent_Workers_Claiming_Availa	000	002	005	208	835	- 006	005	005
bility_Training_Increased_0399								
Average_Expenditure_for_Trainin	000	000	- 052	-2 182	029	- 061	- 050	- 049
g_0399								
Proportion_Employees_Receiving_	- 124	172	- 021	- 721	471	- 034	- 016	- 016
Classroom_Training_0399								
Proportion_Employees_Receiving_	016	176	003	091	928	- 020	002	002
OntheJob_Training_0399								
Sum_Courses_In_Classroom_Form	005	033	005	166	868	- 026	004	004
at_0399								
Sum_Courses_in_OntheJob_Forma	- 033	032	- 029	-1 034	301	- 038	- 024	- 023
t_0399								
1	1	1	1	1	1	1	1	1

Tables 7.8.2a, 7.8.2b and 7.8.2c report the R square, ANOVA and regression

coefficients for the other paid leave 2003-1999 data.

Tabl	Table 7.8.2a. Training vs Other Paid Leave, 2003-1999 - Longitudinal Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
076	006	002	34 27026	006	1 609	7	1926	128			

Table 7.8.2b. Training vs Other Paid Leave, 2003-1999 – Longitudinal ANOVA										
Sum of Squares df Mean Square F Sig										
Regression	13225 810	7	1889 401	1 609	128					
Residual	2261992 664	1926	1174 451							
Total	2275218 473	1933								

Table 7.8.2c. Training vs	Other Paid I	Leave,	2003-1999	- Longi	tudina	al Coef	ficients	5
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions	
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	576	141		4 098	000			
Percent_Workers_Claiming_Too_	001	004	005	229	819	000	005	005
Little_Training_for_Job_0399								
Percent_Workers_Claiming_Availa	007	004	043	1 844	065	041	042	042
bility_Training_Increased_0399								
Average_Expenditure_for_Trainin	000	000	- 030	-1 234	217	- 011	- 028	- 028
g_0399								
Proportion_Employees_Receiving_	341	286	035	1 190	234	022	027	027
Classroom_Training_0399								
Proportion_Employees_Receiving_	- 430	295	- 042	-1 460	144	- 009	- 033	- 033
OntheJob_Training_0399								
Sum_Courses_in_Classroom_Form	063	055	032	1 1 3 4	257	048	026	026
at_0399								
Sum_Courses_in_OntheJob_Forma	062	054	032	1 146	252	033	026	026
t_0399								

Tables 7.8.3a, 7.8.3b and 7.8.3c report the R square, ANOVA and regression

coefficients for the *unpaid leave* 2003-1999 data.

Tabl	Table 7.8.3a. Training vs Unpaid Leave, 2003-1999 - Longitudinal Model Summary										
R	R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change										
108	012	008	38 99172	012	3 256	7	1927	002			

Table 7.8.3b. Training vs Unpaid Leave, 2003-1999 – Longitudinal ANOVA										
Sum of Squares df Mean Square F Sig										
Regression	34654 715	7	4950 674	3 256	002					
Residual	2929722 156	1927	1520 354							
Total	2964376 871	1934								

Table 7.8.3c. Training vs	S Unpaid Lea	ve, 200)3-1999 - Lo	ongitudi	inal C	oeffici	ents	
	Unstandardized		Standardızed					
	Coefficients	L	Coefficients	<u>t</u>	Sig	Correlat	ions	1
	в	Error	Beta			order	Partial	Part
(Constant)	- 864	160		-5 413	000			
Percent_Workers_Claiming_Too_	- 010	005	- 046	-1 994	046	- 047	- 045	- 045
Little_Training_for_Job_0399								
Percent_Workers_Claiming_Availa	003	004	016	716	474	031	016	016
bility_Training_Increased_0399								
Average_Expenditure_for_Trainin	000	000	- 007	- 296	767	001	- 007	- 007
g_0399								
Proportion_Employees_Receiving_	- 193	326	- 017	- 592	554	008	- 013	- 013
Classroom_Training_0399								
Proportion_Employees_Receiving_	677	335	058	2 019	044	070	046	046
OntheJob_Training_0399								
Sum_Courses_In_Classroom_Form	- 047	063	- 021	- 748	454	007	- 017	- 017
at_0399								
Sum_Courses_m_OntheJob_Forma	146	061	067	2 393	017	078	054	054
t_0399								

7.9. Training and absenteeism: Longitudinal (differential) Analysis 2005-2001

Tables 7.9.1a, 7.9.1b and 7.9.1c report the R square, ANOVA and regression

coefficients for the *paid sick leave* 2005-2001 data.

Tabl	Table 7.9.1a. Training vs Paid Sick Leave, 2005-2001 - Longitudinal Model Summary										
R	R Adjusted Std Error R R Square R Square of the Estumate R Square Change F Change df1 df2 Sig F Change										
044	002	- 002	20 72473	002	539	7	1908	806			

Table 7.9.1b. Training vs Paid Sick Leave, 2005-2001 – Longitudinal ANOVA											
	Sum of Squares	df	Mean Square	F	Sig						
Regression	1619 598	7	231 371	539	806						
Residual	819513 202	1908	429 514								
Total	Total 821132 799 1915										

Table 7.9.1c. Training vs	Paid Sick Lo	eave, 2	005-2001 -	Longitu	ıdinal	Coeffi	cients	
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions	
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	310	076		4 074	000		1 41 1141	1 441
Percent_Workers_Claiming_Too_	002	002	021	882	378	024	020	020
Little_Training_for_Job_0501								
Percent_Workers_Claiming_Availa	- 003	002	- 029	-1 255	210	- 032	- 029	- 029
bility_Training_Increased_0501								
Average_Expenditure_for_Trainin	000	000	012	504	615	013	012	012
g_0501								
Proportion_Employees_Receiving_	147	186	022	788	431	015	018	018
Classroom_Training_0501								
Proportion_Employees_Receiving_	005	058	002	083	934	005	002	002
OntheJob_Training_0501								
Sum_Courses_In_Classroom_Form	- 022	034	- 018	- 651	515	- 004	- 015	- 015
at_0501								
Sum_Courses_in_OntheJob_Forma	003	031	002	099	921	000	002	002
t_0501								
	1	1	1	1	1	1	1	1

Tables 7.9.2a, 7.9.2b and 7.9.2c report the R square, ANOVA and regression

coefficients for the other paid leave 2005-2001 data.

Tabl	Table 7.9.2a. Training vs Other Paid Leave, 2005-2001 - Longitudinal Model Summary										
		Adjusted	Std Error								
R	R Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
125	016	012	27 37672	016	4 308	7	1906	000			

Table 7.9.2b. Training vs Other Paid Leave, 2005-2001 – Longitudinal ANOVA											
	Sum of Squares	df	Mean Square	F	Sig						
Regression	22600 070	7	3228 581	4 308	000						
Residual	1428518 177	1906	749 485								
Total	Total 1451118 246 1913										

Table 7.9.2c. Training vs Other Paid Leave, 2005-2001 - Longitudinal Coefficients											
UnstandardizedStandardizedCoefficientsCoefficientstSigCorrelations											
	Coefficients	Std	Coefficients	l	Sig	Zero-		1			
	в	Error	Beta			order	Partial	Part			
(Constant)	- 071	101		- 705	481						
Percent_Workers_Claiming_Too_	- 011	003	- 087	-3 741	000	- 086	- 085	- 085			
Little_Training_for_Job_0501											
Percent_Workers_Claiming_Availa	000	003	000	- 006	995	015	000	000			
bility_Training_Increased_0501											
Average_Expenditure_for_Trainin	000	000	025	1 055	292	041	024	024			
g_0501											
Proportion_Employees_Receiving_	- 355	246	- 039	-1 444	149	019	- 033	- 033			
Classroom_Training_0501											
Proportion_Employees_Receiving_	004	076	001	055	956	- 001	001	001			
OntheJob_Training_0501											
Sum_Courses_in_Classroom_Form	162	045	099	3 613	000	079	082	082			
at_0501											
Sum_Courses_In_OntheJob_Forma	- 045	041	- 027	-1 116	265	001	- 026	- 025			
t_0501											

Tables 7.9.3a, 7.9.3b and 7.9.3c report the R square, ANOVA and regression

coefficients for the *unpaid leave* 2005-2001 data.

Tabl	Table 7.9.3a. Training vs Unpaid Leave, 2005-2001 - Longitudinal Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
157	025	021	31 64393	025	6 895	7	1906	000			

Table 7.9.3b. Training vs Unpaid Leave, 2005-2001 – Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	48330 694	7	6904 385	6 895	000					
Residual	1908551 326	1906	1001 339							
Total 1956882 020 1913										

Table 7.9.3c. Training vs	Unpaid Lea	ve, 200	5-2001 - Lo	ongitudi	inal C	oeffici	ents	
	Unstandardized		Standardized					
	Coefficients	Std.	Coefficients	τ	Sig	Correlat	ions	
	В	Error	Beta			order	Partial	Part
(Constant)	561	116		4 833	000			
Percent_Workers_Claiming_Too_	001	003	006	260	795	010	006	006
Little_Training_for_Job_0501								
Percent_Workers_Claiming_Availa	- 006	003	- 041	-1 791	073	- 043	- 041	- 041
bility_Training_Increased_0501								
Average_Expenditure_for_Trainin	000	000	- 009	- 355	722	- 006	- 008	- 008
g_0501								
Proportion_Employees_Receiving_	- 259	300	- 025	- 864	388	- 022	- 020	- 020
Classroom_Training_0501								
Proportion_Employees_Receiving	- 090	248	- 009	- 365	715	033	- 008	- 008
OntheJob_Training_0501								
Sum_Courses_in_Classroom_Form	- 006	052	- 003	- 125	901	021	- 003	- 003
at_0501								
Sum_Courses_in_OntheJob_Forma	307	050	154	6 1 5 2	000	147	140	139
t_0501								

7.10. Training and absenteeism: Longitudinal (differential) Analysis 2005-1999

Tables 7.10.1a, 7.10.1b and 7.10.1c report the R square, ANOVA and regression

coefficients for the *paid sick leave* 2005-1999 data.

Tabl	Table 7.10.1a. Training vs Paid Sick Leave, 2005-1999 - Longitudinal Model Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
084	007	003	20 02521	007	1 856	7	1850	073		

Table 7.10.1b	Table 7.10.1b. Training vs Paid Sick Leave, 2005-1999 – Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sig						
Regression	5210 277	7	744 325	1 856	073						
Residual	741867 004	1850	401 009								
Total	747077 281	1857									

Table 7.10.1c. Training v	vs Paid Sick I	Leave,	2005-1999	- Longi	tudina	al Coef	ficients	3
	Unstandardized Standardized Coefficients Coefficients t Sig Correlations							
	Coefficients	Std	Coefficients		Sig	Zaro	lons	
	В	Error	Beta			order	Partial	Part
(Constant)	113	081		1 403	161			
Percent_Workers_Claiming_Too_	- 002	002	- 020	- 854	393	- 020	- 020	- 020
Little_Training_for_Job_0599								
Percent_Workers_Claiming_Availa	- 004	002	- 047	-1 994	046	- 052	- 046	- 046
bility_Training_Increased_0599						-		
Average_Expenditure_for_Trainin	000	000	- 041	-1 609	108	- 051	- 037	- 037
g_0599								
Proportion_Employees_Receiving_	- 018	185	- 003	- 100	920	- 039	- 002	- 002
Classroom_Training_0599								:
Proportion_Employees_Receiving_	- 190	167	- 035	-1 144	253	- 050	- 027	- 026
OntheJob_Training_0599								
Sum_Courses_in_Classroom_Form	005	031	004	152	880	- 023	004	004
at_0599								
Sum_Courses_in_OntheJob_Forma	- 009	030	- 008	- 297	766	- 031	- 007	- 007
t_0599								
	1	1	1	1	1	1	1	1

Tables 7.10.2a, 7.10.2b and 7.10.2c report the R square, ANOVA and regression

coefficients for the other paid leave 2005-1999 data.

Tabl	Table 7.10.2a. Training vs Other Paid Leave, 2005-1999- Longitudinal Model Summary												
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change					
077	006	002	24 08072	006	1 576	7	1849	138					

Table 7.10.2b. 7	Training vs Other	Paid Leave,	2005-1999 - Long	gitudinal AN	IOVA							
Sum of Squares df Mean Square F Sig												
Regression	6395 630	7	913 661	1 576	138							
Residual	1072200 242	1849	579 881									
Total	1078595 873	1856										

Table 7.10.2c. Training v	vs Other Paid	Leave	, 2005-1999	9 - Long	gitudii	nal Coe	efficien	ts
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions	
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	149	097		1 536	125			
Percent_Workers_Claiming_Too_	003	003	021	892	372	021	021	021
Little_Training_for_Job_0599								
Percent_Workers_Claiming_Availa	005	003	044	1 871	062	046	043	043
bility_Training_Increased_0599								
Average_Expenditure_for_Trainin	000	000	030	1 1 80	238	036	027	027
g_0599								
Proportion_Employees_Receiving_	- 231	224	- 032	-1 035	301	- 005	- 024	- 024
Classroom_Training_0599								
Proportion_Employees_Receiving_	057	201	009	286	775	015	007	007
OntheJob_Training_0599								
Sum_Courses_in_Classroom_Form	024	037	018	649	516	036	015	015
at_0599								
Sum_Courses_in_OntheJob_Forma	039	037	030	1 067	286	048	025	025
t_0599								

Tables 7.10.3a, 7.10.3b and 7.10.3c report the R square, ANOVA and regression

coefficients for the *unpaid leave* 2005-1999 data.

Tabl	Table 7.10.3a. Training vs Unpaid Leave, 2005-1999 - Longitudinal Model Summary												
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change					
172	030	026	39 98461	030	8 056	7	1850	000					

Table 7.10.3b. Tra	ining vs Unpaid I	Leave, 2005-1	999 – Longitudinal	ANOVA								
Sum of Squares df Mean Square F Sig												
Regression	90155 915	7	12879 416	8 056	000							
Residual	2957722 401	1850	1598 769									
Total	3047878 316	1857										

Table 7.10.3c. Training vs	Unpaid Leave	, 2005-	1999 - Long	itudinal	Coeff	icients		
	Unstandardized		Standardized	t	Sig	Correlati	0.00	
	Coefficients	Std			Joig	Zero-		1
	В	Error	Beta			order	Partial	Part
(Constant)	019	161		119	906			
Percent_Workers_Claiming_Too_Littl	- 003	005	- 014	- 618	536	- 028	- 014	- 014
e_Training_for_Job_0599								
Percent_Workers_Claiming_Availabili	004	004	022	957	339	039	022	022
ty_Training_Increased_0599								
Average_Expenditure_for_Training_0	- 001	000	- 053	-2 132	033	- 021	- 050	- 049
599								
Proportion_Employees_Receiving_Cla	- 128	370	- 011	- 345	730	- 003	- 008	- 008
ssroom_Training_0599								
Proportion_Employees_Receiving_On	- 039	333	- 004	- 118	906	046	- 003	- 003
theJob_Training_0599			-					
Sum_Courses_in_Classroom_Format_	048	062	021	782	434	072	018	018
0599								
Sum_Courses_in_OntheJob_Format_0	346	061	160	5 691	000	161	131	130
599								

7.11. Training and absenteeism: Summary of Cross-sectional Analysis and Longitudinal (differential) Analysis

7.11.1 Training and Paid Sick Leave

Table 7.11.1a shows the summary, regression coefficients and their associated significance levels, of the cross-sectional analyses based on paid sick leave data (*Average Days of Sick Paid Leave*) as dependent variable. Table 7.11.1b shows the equivalent summary for the longitudinal analyses. In general, we would expect an inverse relationship between training and absenteeism, albeit the evidence reported in the literature is not conclusive. The cross-sectional analyses show that only three variables have a significant relationship over multiple years.

The first variable is **Percent Workers Claiming Too Little Training for Job**, which measures the percentage of employees claiming that the amount of training is too little for the demands of the job. If we assume that employees' perception is correct, then a large value of this variable signals a lower level of training. Therefore, we would expect a positive relationship between this variable and paid sick leave. Specifically, higher values of this variable should be associated with higher values of absenteeism. From Table 7.11.1a, we can confirm the presence of a positive and significant relationship for the 2001, 2003, and 2005 data; the 1999 data also exhibited the same positive relation albeit at a higher significance level (p=0.068). Two other training variables exhibited a strong relation with absenteeism, as measured by paid sick leave. However, the results were not in the expected direction and thus somewhat in contradiction with described The variable those above.

Percent Workers Claiming Availability Training Increased measures the percentage of employees claiming that the availability of training has increased. If we assume that the employees' perception is correct, then a large value of this variable signals a higher level of training. Accordingly, we would expect higher values of this variable to be accompanied by lower values of paid sick leave (i.e., inverse relationship). However, the data show the opposite: a significant and positive relationship for all four years. A similar scenario occurred for the training expenditure, which showed a positive and significant Average Expenditure for Training, relationship three out of four years instead of an inverse relationship.

The longitudinal analyses were not informative. Unfortunately, no insight is offered by the results of the longitudinal analyses that show that none of the training variables had an effect.

7.11.2 Training and Other paid leave

Table 7.11.2a and 7.11.2b show the summary of other paid leave for the crosssectional and longitudinal analyses, respectively. The results show virtually no effect for any of the training variables.

7.11.3 Training and Unpaid Leave

Table 7.11.3a and 7.11.3b show the summary of unpaid leave for the crosssectional and longitudinal analyses, respectively. Also in this case, the results are rather inconsistent. For the cross-sectional analysis, only two variables seem to have some effect. The first is *Percent Workers Claiming Availability Training Increased*, which

measures the percentage of employees claiming that the availability of training has increased. The relation with the unpaid leave measure was significant in three out of four years (2001, 2003, and 2005). However, the direction of the effect was positive for 2001 other negative for the The variable and two years. other is Average Expenditure for Training, which measures the workplace training expenditure per employee. Again the relation with the unpaid leave measure was significant in three out of four years (1999, 2001, and 2005), but in the opposite the direction.

The longitudinal data are shown in Table 7.11.3b. From the table, it can be seen that the only variable that had some effect was <u>Sum Courses in OntheJob Format</u>, which showed a positive and significant relation five times out of six.

In summary, the cross-sectional analysis and the longitudinal analysis show rather inconsistent results. To some extent this parallels what was found in the literature (see Chapter 3). The relationship between training and absenteeism, if any, might be more complex than assumed.

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Table 7.11.1a - Training and Paid Sick Le	ave – Sum	mary C	_rc	oss-Sectiona	ii Kegi	es	sion Coerri	cients	 	
		1999			2001			2003		2005
	Coefficients			Coefficients			Coefficients		Coefficients	
	В	Sig.		В	Sig.		В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training_for_Job	004	068		007	.000		006	.004	004	.002
Percent_Workers_Claiming_Availability_Training_Increased	009	.000		008	.000		008	.000	002	.051
Average_Expenditure_for_Training	000	.036		000	.053		000	.035	000	119
Proportion_Employees_Receiving_Classroom_Training	- 302	103		074	626		- 069	652	- 066	508
Proportion_Employees_Receiving_OntheJob_Training	- 304	076		- 011	818		- 023	871	047	607
Sum_Courses_in_Classroom_Format	116	.000		037	171		043	194	081	.000
Sum_Courses_in_OntheJob_Format	- 030	296		024	320		028	407	041	.043

Table 7.11.1b - Training ar	nd Paid	Sick Lea	ave	– Sum	mary Lo	ng	gitudinal	Regress	io	n Coeffi	cients				
		2001			2003			2005			2003		2005		2005
		-			-			-			-		-		-
		1999			2001			2003			1999		2001		1999
	Coeff			Coeff			Coeff.			Coeff.		Coeff.		Coeff	
	В	Sig		В	Sig.		В	Sig.		В	Sig.	В	Sig.	В	Sig
Percent_Workers_Claiming_Too_Littl	001	643		- 003	371		- 003	205		009	.001	002	378	- 002	393
Percent_Workers_Claiming_Availabil	010	.000		001	664		- 002	315		000	835	- 003	210	- 004	.046
Average_Expenditure_for_Training	000	178		000	937		000	217		000	.029	000	615	000	108
Proportion_Employees_Receiving_Cl	- 244	138		361	149		- 154	363		- 124	471	147	431	- 018	920
Proportion_Employees_Receiving_On	037	562		- 003	966		- 103	485		016	928	005	934	 - 190	253
Sum_Courses_in_Classroom_Format	- 002	958		- 112	.012		- 002	942		005	868	- 022	515	005	880
Sum_Courses_1n_OntheJob_Format	050	088		076	082		- 020	513		- 033	301	003	921	- 009	766

										<u> </u>
Table 7.11.2a - Training and Other Paid L	eave - Sum	mary (Crc	oss-Sectiona	ıl Regi	res	sion Coeffic	cients		
		1999			2001			2003		2005
	Coefficients	Sig.		Coefficients			Coefficients		Coefficients	
	В			В	Sig.		В	Sig	В	Sig.
Percent_Workers_Claiming_Too_Little_Training_for_Job	002	191		001	686		- 002	665	- 003	262
Percent_Workers_Claiming_Availability_Training_Increased	006	.000		003	118		010	.002	- 002	427
Average_Expenditure_for_Training	000	397		000	.059		000	160	001	.000
Proportion_Employees_Receiving_Classroom_Training	034	799		118	586		1 530	.000	- 498	.023
Proportion_Employees_Receiving_OntheJob_Training	- 286	021		- 313	036		- 089	737	358	074
Sum_Courses_in_Classroom_Format	093	.000		030	439		051	377	072	109
Sum_Courses_In_OntheJob_Format	- 010	642		062	091		- 090	107	- 034	442

Table 7.11.2b- Training and Other Paid	Leave	- Summ	ary Long	gitudinal	Regress	sion Coe	fficients					
		2001		2003		2005		2003		2005		2005
		-		-		-		-		-		-
		1999		2001		2003		1999		2001		1999
	Coeff		Coeff		Coeff		Coeff		Coeff		Coeff	
	В	Sig.	В	Sig.	В	Sig.	В	Sig	В	Sig.	В	Sig.
Percent_Workers_Claiming_Too_Little_Training_for_Jo	- 001	731	002	575	- 014	.002	001	819	- 011	.000	003	372
Percent_Workers_Claiming_Availability_Training_Increa	004	187	- 002	542	- 014	.000	007	065	000	995	005	062
Average_Expenditure_for_Training	000	275	000	679	- 001	120	000	217	000	292	000	238
Proportion_Employees_Receiving_Classroom_Training	- 159	496	- 462	191	984	.012	341	234	- 355	149	- 231	301
Proportion_Employees_Receiving_OntheJob_Training	- 001	995	042	694	- 121	716	- 430	144	004	956	057	775
Sum_Courses_in_Classroom_Format	055	207	087	167	045	508	063	257	162	.000	024	516
Sum_Courses_in_OntheJob_Format	- 033	430	034	582	067	325	062	252	- 045	265	039	286
Table 7.11.3a - Training and Unpaid Leav	Table 7.11.3a - Training and Unpaid Leave - Summary Cross-Sectional Regression Coefficients											
--	---	------	--------------	------	--------------	------	--------------	------	--	--	--	
		1999		2001		2003		2005				
	Coefficients		Coefficients		Coefficients		Coefficients					
	В	Sig	В	Sig.	В	Sig.	В	Sig.				
Percent_Workers_Claiming_Too_Little_Training_for_Job	000	961	- 006	074	- 006	.036	- 017	.000				
Percent_Workers_Claiming_Availability_Training_Increased	000	906	007	.013	- 014	.000	- 007	.020				
Average_Expenditure_for_Training	- 001	.008	000	.022	000	306	- 001	.002				
Proportion_Employees_Receiving_Classroom_Training	- 205	569	841	.004	016	944	- 221	350				
Proportion_Employees_Receiving_OntheJob_Training	- 168	614	- 352	082	659	.001	106	624				
Sum_Courses_in_Classroom_Format	- 100	069	- 116	.026	038	393	016	732				
Sum_Courses_in_OntheJob_Format	112	047	074	138	- 050	249	075	116				

Table 7.11.3b - Training	Fable 7.11.3b - Training and Unpaid Leave - Summary Longitudinal Regression Coefficients											
		2001-		2003-		2005-		2003-		2005-		2005-
		1999		2001		2003		1999		2001		1999
	Coeff.		Coeff.		Coeff		Coeff		Coeff.		Coeff	
	В	Sig.	В	Sig.	В	Sig.	В	Sig.	В	Sig.	В	Sig.
Percent_Workers_Claiming_Too_L	017	.001	- 003	347	010	.008	- 010	046	001	795	- 003	536
Percent_Workers_Claiming_Availa	004	442	002	441	- 020	.000	003	474	- 006	073	004	339
Average_Expenditure_for_Training	000	814	000	276	- 001	.007	000	767	000	722	- 001	.033
Proportion_Employees_Receiving_	640	084	166	559	485	119	- 193	554	- 259	388	- 128	730
Proportion_Employees_Receiving_	-1 410	.000	025	769	- 250	354	677	.044	- 090	715	- 039	906
Sum_Courses_in_Classroom_Form	- 212	.002	047	353	155	.005	- 047	454	- 006	901	048	434
Sum_Courses_in_OntheJob_Forma	319	.000	047	340	182	.001	146	.017	307	.000	346	000

8 Chapter: The effect on Training on Job Satisfaction

In Chapter 3, we noted that the evidence linking training to job satisfaction is rather limited and conflicting. Krueger and Rouse (1998) found trainees and non-trainees did not differ in the level of satisfaction with the organization. In contrast to Krueger & Rouse, Leckie et al. (2001) using 1999 WES data found a positive relationship between training and job satisfaction. However, these studies were descriptive, preliminary, and limited in years. In our study, we will look for a more direct relation between the two variables for multiple years. This chapter will present the results of both the cross sectional and longitudinal analyses that examined the relationship between training and job satisfaction.

Job satisfaction can be affected by both economic and non-economic factors. For this reason, the WES reports on two types of job satisfaction: one specifically related to economic rewards and the other related to overall job satisfaction. In this study, the more general attitude, or feeling, towards the job and the organization was measured as the median of the employees' ratings of overall satisfaction (Median Overall Satisfaction). The satisfaction related to economic rewards was measured as the median of the employees' ratings of satisfaction relative to monetarv compensation (Median Compensation Satisfaction). To improve clarity, we recoded the original job satisfaction data provided by the WES so that higher values of these two variables signaled increasing levels of satisfaction (see Chapter 5 for details).

With regards to training, we used all the seven training variables which were:

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-Percentage of workers claiming that the amount of training available was too little for the demands of the job (*Percent_Workers_Claiming_Too_Little_Training_for_Job*);

-Percentage of workers claiming that the amount of training available to employees has increased (*Percent_Workers_Claiming_Availability_Training_Increased*);

-Average Training Expenditure (<u>Average_Expenditure_for_Training</u>);

-Proportion of employees who received classroom training (*Proportion Employees Receiving Classroom Training*);

-Proportion of employees who received on-the job-training (*Proportion Employees Receiving Onthe Job Training*);

-Sum of different types of courses provided in classroom format (Sum Courses in Classroom Format)

-Sum of different types of courses provided through on-the job training (Sum Courses in OntheJob Format).

8.1. Training and job satisfaction: Cross-sectional Analysis for 1999

Tables 8.1.1a, 8.1.1b, and 8.1.1c report the R square, ANOVA, and coefficients

for the 1999 overall job satisfaction data.

Table 8.1.1a. Training vs Overall job satisfaction, 1999-Cross-Sectional Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change
356	127	125	2 85630	127	66 684	7	3221	000
(1		

Table 8.1.1b. Training vs Overall job satisfaction, 1999 – Cross-Sectional ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	3808 254	7	544 036	66 684	000					
Residual	26278 305	3221	8 158							
Total	30086 559	3228								

Table 8.1.1c. Training vs Overall job satisfaction, 1999 - Cross-Sectional Coefficients											
	UnstandardizedStandardizedCoefficientsCoefficientstSigCorrelations										
	Coefficients	Std	Coefficients		Sig	Zero	lions	1			
	В	Error	Beta			order	Partial	Part			
(Constant)	3 234	017		195 432	000						
Percent_Workers_Claiming_Too_	- 003	000	- 178	-10 589	000	- 229	- 183	- 174			
Little_Training_for_Job_99											
Percent_Workers_Claiming_Avail	004	000	247	14 316	000	270	245	236			
ability_Training_Increased_99											
Average_Expenditure_for_Trainin	000	000	062	3 404	001	064	060	056			
g_99											
Proportion_Employees_Receiving_	058	027	056	2 179	029	023	038	036			
Classroom_Training_99											
Proportion_Employees_Receiving_	- 092	025	- 089	-3 747	000	- 085	- 066	- 062			
OntheJob_Training_99											
S um_Courses_in_Classroom_For	- 010	004	- 062	-2 427	015	- 018	- 043	- 040			
mat_99											
Sum_Courses_In_OntheJob_Forma	- 010	004	- 056	-2 343	019	- 093	- 041	- 039			
t_99											

Tables 8.1.2a, 8.1.2b, and 8.1.2c report the R square, ANOVA, and coefficients

for the 1999 *compensation job satisfaction* data.

Table	e 8.1.2a.	Training	vs Compensa	tion job satisf	action, 199	9-Cros	s-Sect	ional Model			
Sum	Summary										
		Adjusted	Std Error								
R	R Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
321	103	101	3 27840	103	52 918	7	3222	000			

Table 8.1.2b. Training vs Compensation job satisfaction, 1999 - Cross-Sectional ANOVA F Sum of Squares df S1g 000 Mean Square Regression 3981 263 7 568 752 52 918 10 748 Residual 34629 677 3222 3229 Total 38610 940

		<u></u>						
Table 8.1.2c. Training	vs Comper	isation	job satisf	faction,	1999	- Cr	oss-See	ctional
Coefficients								
	Unstandardized		Standardized	·				
	Coefficients		Coefficients	t	Sig	Correla	tions	1
	в	Std Error	Beta			Zero-	Partial	Part
(Constant)	2 888	019		152 053	000			
Percent_Workers_Claiming_Too_	- 002	000	- 116	-6 813	000	- 159	- 119	- 114
Little_Training_for_Job_99								
Percent_Workers_Claiming_Avail	003	000	194	11 084	000	228	192	185
ability_Training_Increased_99								
Average_Expenditure_for_Trainin	000	000	116	6 337	000	136	111	106
g_99								
Proportion_Employees_Receiving_	096	030	082	3 163	002	072	056	053
Classroom_Training_99								
Proportion_Employees_Receiving_	- 140	028	- 120	-4 981	000	- 088	- 087	- 083
OntheJob_Training_99								
Sum_Courses_in_Classroom_Form	002	005	012	478	633	050	008	008
at_99								
Sum_Courses_In_OntheJob_Forma	- 017	005	- 091	-3 721	000	- 084	- 065	- 062
t_99								

8.2. Training and job satisfaction: Cross-sectional Analysis for 2001

Tables 8.2.1a, 8.2.1b, and 8.2.1c report the R square, ANOVA, and coefficients

for the 2001 overall job satisfaction data.

Table 8.2.1a. Training vs Overall job satisfaction, 2001 - Cross-Sectional Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change
321	103	101	3 23821	103	49 542	7	3025	000
					1.		1	

Table 8.2.1b. Training vs Overall job satisfaction, 2001 – Cross-Sectional ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	3636 471	7	519 496	49 542	000					
Residual	31720 154	3025	10 486							
Total	35356 624	3032								

Table 8.2.1c. Training vs	overall job	satisfac	ction, 2001	- Cross-	Sectio	onal Co	oefficie	ents
	Unstandardized		Standardized	l t	Sig	Correls	ations	
	Coefficients	Std	Coemetents		Jig	Zero-		
	В	Error	Beta			order	Partial	Part
(Constant)	3 155	016		202 971	000			
Percent_Workers_Claiming_Too_	- 004	000	- 198	-11 269	000	- 217	- 201	- 194
Little_Training_for_Job_01								
Percent_Workers_Claiming_Avail	004	000	236	13 416	000	251	237	231
ability_Training_Increased_01								
Average_Expenditure_for_Trainin	000	000	016	812	417	021	015	014
g_01								
Proportion_Employees_Receiving_	013	027	011	499	618	028	009	009
Classroom_Training_01								
Proportion_Employees_Receiving_	002	009	003	187	852	007	003	003
OntheJob_Training_01								
Sum_Courses_in_Classroom_Form	- 007	005	- 038	-1 380	168	002	- 025	- 024
at_01								
Sum_Courses_In_OntheJob_Forma	004	004	021	924	356	- 002	017	016
t_01								

Tables 8.2.2a, 8.2.2b, and 8.2.2c report the R square, ANOVA, and coefficients

for the 2001 *compensation job satisfaction* data.

Tabl	Table 8.2.2a. Training vs Compensation job satisfaction, 2001 - Cross-Sectional Model										
Summary											
Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change											
275	076	074	3 49974	076	35 365	7	3022	000			

Table 8.2.2b. Training vs Compensation job satisfaction, 2001 - Cross-Sectional ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	3032 068	7	433 153	35 365	000					
Residual	37014 068	3022	12 248		_					
Total	40046 136	3029								

Table 8.2.2c. Training vs Compensation job satisfaction, 2001 - Cross-Sectional Coefficients								
	Unstandardized Coefficients		Standardized Coefficients t		Sig	Correlations		
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	2 945	017		175 188	000			
Percent_Workers_Claiming_Too_	- 004	000	- 188	-10 582	000	- 202	- 189	- 185
Little_Training_for_Job_01								
Percent_Workers_Claiming_Avail	002	000	144	8 041	000	149	145	141
ability_Training_Increased_01								
Average_Expenditure_for_Trainin	000	000	- 026	-1 295	195	- 016	- 024	- 023
g_01								
Proportion_Employees_Receiving_	091	030	072	3 042	002	040	055	053
Classroom_Training_01								
Proportion_Employees_Receiving_	- 090	021	- 088	-4 266	000	- 101	- 077	- 075
OntheJob_Training_01								
Sum_Courses_in_Classroom_Form	004	005	020	715	475	000	013	013
at_01								
Sum_Courses_In_OntheJob_Forma	- 011	005	- 054	-2 183	029	- 077	- 040	- 038
t_01								

8.3. Training and job satisfaction: Cross-sectional Analysis for 2003

Tables 8.3.1a, 8.3.1b, and 8.3.1c report the R square, ANOVA, and coefficients

for the 2003 overall job satisfaction data.

Table 8.3.1a. Training vs Overall job satisfaction, 2003 - Cross-Sectional Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change
267	071	069	3 00249	071	33 872	7	3095	000
		[

Table 8.3.1b. Training vs Overall job satisfaction, 2003 - Cross-Sectional ANOVA									
	Sum of Squares	df	Mean Square	F	Sig				
Regression	2137 478	7	305 354	33 872	000				
Residual	27901 237	3095	9 015						
Total	30038 715	3102							

Table 8.3.1c. Training vs	Overall job	satisfac	ction, 2003	- Cross-	Sectio	onal Co	oefficie	ents
	Unstandardized		Standardized		G .			
	Coefficients	Std	Coefficients	t	Sig	Zero-	lions	
	В	Error	Beta			order	Partial	Part
(Constant)	3 244	015		218 169	000			
Percent_Workers_Claiming_Too_	- 004	000	- 200	-11 503	000	- 208	- 202	- 199
Little_Training_for_Job_03								
Percent_Workers_Claiming_Avail	002	000	165	9115	000	158	162	158
ability_Training_Increased_03								
Average_Expenditure_for_Trainin	000	000	041	2 039	042	015	037	035
g_03								
Proportion_Employees_Receiving_	- 056	025	- 053	-2 212	027	- 032	- 040	- 038
Classroom_Training_03								
Proportion_Employees_Receiving_	026	023	025	1 164	245	012	021	020
OntheJob_Training_03								
Sum_Courses_In_Classroom_Form	- 007	005	- 039	-1 368	171	- 016	- 025	- 024
at_03								
Sum_Courses_In_OntheJob_Forma	- 004	005	- 020	- 773	440	- 012	- 014	- 013
t_03								

Tables 8.3.2a, 8.3.2b, and 8.3.2c report the R square, ANOVA, and coefficients

for the 2003 *compensation job satisfaction* data.

Tabl	e 8.3.2a.	Training v	s Compensat	ion job satisfa	ction, 2003	- Cros	s-Sect	ional Model	
Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change	
259	067	065	3 29821	067	31 926	7	3096	000	

Table 8.3.2b. Training vs Compensation job satisfaction, 2003 - Cross-Sectional ANOVA S1g 000 Sum of Squares df Mean Square F Regression 2431 099 7 347 300 31 926 Residual 33678 906 10 878 3096 Total 36110 005 3103

Table 8.3.2c. Training	vs Comper	nsation	job satisf	action,	2003	- Cr	oss-See	ctional
Coefficients								
	Unstandardized		Standardized					
	Coefficients		Coefficients	t	Sig	Correla	tions	
	В	Std Error	Beta			Zero- order	Partial	Part
(Constant)	2 889	016		181 144	000			
Percent_Workers_Claiming_Too_	- 004	000	- 185	-10 642	000	- 189	- 188	- 185
Little_Training_for_Job_03								
Percent_Workers_Claiming_Avail	003	000	163	8 988	000	173	159	156
ability_Training_Increased_03								
Average_Expenditure_for_Trainin	000	000	060	2 961	003	072	053	051
g_03								
Proportion_Employees_Receiving_	031	024	039	1 282	200	039	023	022
Classroom_Training_03								
Proportion_Employees_Receiving_	- 032	023	- 042	-1 427	154	014	- 026	- 025
OntheJob_Training_03								
Sum_Courses_In_Classroom_Form	- 004	005	- 019	- 698	485	054	- 013	- 012
at_03								
Sum_Courses_In_OntheJob_Forma	000	005	- 002	- 083	934	024	- 001	- 001
t_03								

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8.4. Training and job satisfaction: Cross-sectional Analysis for 2005

Tables 8.4.1a, 8.4.1b, and 8.4.1c report the R square, ANOVA, and coefficients

for the 2005 overall job satisfaction data.

Table 8.4.1a. Training vs Overall job satisfaction, 2005 - Cross-Sectional Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change
236	056	054	3 15979	056	29 701	7	3513	000

Table 8.4.1b. Training vs Overall job satisfaction, 2005 - Cross-Sectional ANOVA									
	Sum of Squares	df	Mean Square	F	Sig				
Regression	2075 817	7	296 545	29 701	000				
Residual	35074 744	3513	9 984						
Total	37150 560	3520							

Table 8.4.1c. Training vs	s Overall job	satisfac	ction, 2005	- Cross-	Sectio	onal C	oefficie	ents
	Unstandardized		Standardized					
	Coefficients	C+4	Coefficients	t	Sig	Correla	tions	
	В	Error	Beta			order	Partial	Part
(Constant)	3 217	014		225 537	000			
Percent_Workers_Claiming_Too_	- 003	000	- 166	-10 120	000	- 173	- 168	- 166
Ltttle_Training_for_Job_05	-		-			-		
Percent_Workers_Claiming_Avail	003	000	158	9 128	000	156	152	150
ability_Training_Increased_05								
Average_Expenditure_for_Trainin	000	000	- 027	-1 388	165	000	- 023	- 023
g_05								
Proportion_Employees_Receiving_	019	022	025	863	388	- 007	015	014
Classroom_Training_05								
Proportion_Employees_Receiving_	- 040	021	- 055	-1 946	052	- 038	- 033	- 032
OntheJob_Training_05								
Sum_Courses_in_Classroom_Form	004	005	021	808	419	032	014	013
at_05								
Sum_Courses_in_OntheJob_Forma	- 004	005	- 020	- 834	404	002	- 014	- 014
t_05			-					

Tables 8.4.2a, 8.4.2b, and 8.4.2c report the R square, ANOVA, and coefficients

for the 2005 *compensation job satisfaction* data.

Tabl	Table 8.4.2a. Training vs Compensation job satisfaction, 2005 - Cross-Sectional Model									
Summary										
	•									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change		
348	121	119	3 17033	121	68 890	7	3511	000		

Table 8.4.2b. ANOVA	Training vs Co	ompensation .	job satisfaction,	2005 - Cro	oss-Sectional
	Sum of Squares	df	Mean Square	F	Sig
Regression	4846 882	7	692 412	68 890	000
Residual	35289 017	3511	10 051		
Total	40135 899	3518			

Table 8.4.2c. Training	vs Comper	nsation	job satisf	action,	2005	- Cr	oss-Se	ctional
Coefficients								
	Unstandardized		Standardized	t	Sig	Correls	ations	
	Coefficients	Std	Coefficients		Sig	Zero-		
	В	Error	Beta			order	Partial	Part
(Constant)	3 056	014		213 160	000			
Percent_Workers_Claiming_Too_	- 006	000	- 290	-18 221	000	- 294	- 294	- 288
Little_Training_for_Job_05								
Percent_Workers_Claiming_Avail	000	000	027	1 586	113	053	027	025
ability_Training_Increased_05		1						
Average_Expenditure_for_Trainin	000	000	062	3 321	001	086	056	053
g_05			-					
Proportion_Employees_Receiving_	137	023	171	6 067	000	046	102	096
Classroom_Training_05								
Proportion_Employees_Receiving_	- 151	021	- 199	-7 253	000	- 079	- 121	- 115
OntheJob_Training_05								
Sum_Courses_in_Classroom_Form	010	005	051	2 095	036	072	035	033
at_05								
Sum_Courses_in_OntheJob_Forma	- 009	005	- 046	-1 997	046	- 034	- 034	- 032
t_05					,			

8.5. Training and job satisfaction: Longitudinal (differential) Analysis 2001-1999

Tables 8.5.1a, 8.5.1b and 8.5.1c report the R square, ANOVA and regression

coefficients with regards to *overall job satisfaction* for the 2001-1999 longitudinal data.

Table 8.5.1a. Training vs Overall job satisfaction, 2001-1999 – Longitudinal Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
304	093	090	3 53368	093	32 688	7	2243	000

Table 8.5.1b. Training vs Overall job satisfaction, 2001-1999 - Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	2857 179	7	408 168	32 688	000					
Residual	28008 043	2243	12 487							
Total	30865 222	2250								

Table 8.5.1c. Training vs Overall job satisfaction, 2001-1999 - Longitudinal										
Coefficients		_								
	Unstandardized		Standardized		C	0.14				
	Coefficients	C+d	Coefficients	t	Sig	Correlat	ions	Γ		
	В	Error	Beta		1	order	Partial	Part		
(Constant)	- 058	013		-4 441	000					
Percent_Workers_Claiming_Too_	- 004	000	- 250	-12 320	000	- 251	- 252	- 248		
Little_Training_for_Job_0199										
Percent_Workers_Claiming_Availa	002	000	122	5 977	000	141	125	120		
bility_Training_Increased_0199										
Average_Expenditure_for_Trainin	000	000	070	3 259	001	076	069	066		
g_0199										
Proportion_Employees_Receiving_	014	028	012	494	622	013	010	010		
Classroom_Training_0199										
Proportion_Employees_Receiving_	- 071	024	- 071	-2 996	003	- 031	- 063	- 060		
OntheJob_Training_0199										
Sum_Courses_In_Classroom_Form	008	005	037	1 467	143	050	031	029		
at_0199										
Sum_Courses_In_OntheJob_Forma	013	005	064	2 632	009	052	055	053		
t_0199										

Tables 8.5.2a, 8.5.2b and 8.5.2c report the R square, ANOVA and regression

coefficients for the *compensation job satisfaction* 2001-1999 data.

Tabl Mod	Table 8.5.2a. Training vs Compensation job satisfaction, 2001-1999 - Longitudinal Model Summary										
	-										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
329	108	105	3 66682	108	38 873	7	2243	000			

Table 8.5.2b. Training vs Compensation job satisfaction, 2001-1999 - Longitudinal ANOVA

	Sum of Squares	df	Mean Square	F	Sig
Regression	3658 692	7	522 670	38 873	000
Residual	30158 426	2243	13 446		
Total	33817 118	2250			

Table 8.5.2c. Training vs Compensation job satisfaction, 2001-1999 - Longitudinal											
Coefficients											
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions				
	В	Std Error	Beta			Zero- order	Partial	Part			
(Constant)	- 034	013		-2 518	012						
Percent_Workers_Claiming_Too_	- 005	000	- 271	-13 494	000	- 276	- 274	- 269			
Little_Training_for_Job_0199											
Percent_Workers_Claiming_Availa	003	000	146	7 251	000	159	151	145			
bility_Training_Increased_0199											
Average_Expenditure_for_Trainin	000	000	019	884	377	036	019	018			
g_0199											
Proportion_Employees_Receiving_	055	029	047	1 925	054	028	041	038			
Classroom_Training_0199											
Proportion_Employees_Receiving_	- 085	024	- 081	-3 456	001	- 057	- 073	- 069			
OntheJob_Training_0199											
Sum_Courses_in_Classroom_Form	015	005	070	2 807	005	045	059	056			
at_0199											
Sum_Courses_In_OntheJob_Forma	- 003	005	- 015	- 607	544	- 015	- 013	- 012			
t_0199											

8.6. Training and job satisfaction: Longitudinal (differential) Analysis 2003-2001

Tables 8.6.1a, 8.6.1b and 8.6.1c report the R square, ANOVA and regression

coefficients for the *overall job satisfaction* 2003-2001 data.

Table 8.6.1a. Training vs Overall job satisfaction, 2003-2001 - Longitudinal Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change
362	131	128	3 32335	131	43 892	7	2032	000

Table 8.6.1b. Training vs Overall job satisfaction, 2003-2001 - Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	3393 431	7	484 776	43 892	000					
Residual	22442 802	2032	11 045		-					
Total	25836 233	2039								

Table 8.6.1c. Training	Table 8.6.1c. Training vs Overall job satisfaction, 2003-2001 - Longitudinal										
Coefficients		.									
	Unstandardized		Standardized		C.	Comba					
······	Coefficients	Std	Coefficients	t	Sig	Zero-	lons	1			
	В	Error	Beta			order	Partial	Part			
(Constant)	- 028	012		-2 371	018						
Percent_Workers_Claiming_Too_	- 005	000	- 310	-14 876	000	- 320	- 313	- 308			
Little_Training_for_Job_0301											
Percent_Workers_Claiming_Availa	002	000	136	6 529	000	164	143	135			
bility_Training_Increased_0301											
Average_Expenditure_for_Trainin	000	000	- 038	-1 785	074	- 044	- 040	- 037			
g_0301				-	1	:					
Proportion_Employees_Receiving	- 051	031	- 040	-1 624	105	- 050	- 036	- 034			
Classroom_Training_0301											
Proportion_Employees_Receiving_	052	025	047	2 071	039	018	046	043			
OntheJob_Training_0301											
Sum_Courses_in_Classroom_Form	011	005	052	2 066	039	- 027	046	043			
at_0301											
Sum_Courses_in_OntheJob_Forma	- 023	006	- 099	-4 141	000	- 067	- 091	- 086			
t_0301											

Tables 8.6.2a, 8.6.2b and 8.6.2c report the R square, ANOVA and regression

coefficients for the *compensation job satisfaction* 2003-2001 data.

Table 8.6.2a. Training vs Compensation job satisfaction, 2003-2001 - Longitudinal Model Summary											
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
289	083	080	3 70768	083	26 404	7	2032	000			

Table 8.6.2b. Training vs Compensation job satisfaction, 2003-2001 - Longitudinal ANOVA											
	Sum of Squares	df	Mean Square	F	Sig						
Regression	2540 786	7	362 969	26 404	000						
Residual	27933 756	2032	13 747								
Total	30474 542	2039									

Table 8.6.2c. Training vs Compensation job satisfaction, 2003-2001 - Longitudinal Coefficients										
Coefficients	Unstandardized		Standardized		1	[
	Coefficients		Coefficients	t	Sig	Correlations				
	B	Std	Beta			Zero-	Partial	Part		
(Constant)	- 042	013		-3 168	002		1 cittui	Tut		
Percent_Workers_Claiming_Too_	- 005	000	- 247	-11 519	000	- 258	- 248	- 245		
Little_Training_for_Job_0301										
Percent_Workers_Claiming_Availa	002	000	116	5 431	000	145	120	115		
bility_Training_Increased_0301										
Average_Expenditure_for_Trainin	000	000	- 045	-2 071	038	- 042	- 046	- 044		
g_0301										
Proportion_Employees_Receiving_	065	034	047	1 911	056	006	042	041		
Classroom_Training_0301										
Proportion_Employees_Receiving_	- 002	010	- 004	- 182	855	003	- 004	- 004		
OntheJob_Training_0301										
Sum_Courses_in_Classroom_Form	- 005	006	- 021	- 841	400	- 023	- 019	- 018		
at_0301										
Sum_Courses_in_OntheJob_Forma	003	006	011	471	638	007	010	010		
t_0301										

8.7. Training and job satisfaction: Longitudinal (differential) Analysis 2005-2003

Tables 8.7.1a, 8.7.1b and 8.7.1c report the R square, ANOVA and regression

coefficients for the overall job satisfaction 2005-2003 data.

Table 8.7.1a. Training vs Overall job satisfaction, 2005-2003 - Longitudinal Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
262	069	066	3 81251	069	23 200	7	2206	000

Table 8.7.1b. Training vs Overall job satisfaction, 2005-2003 - Longitudinal ANOVA											
	Sum of Squares	df	Mean Square	F	Sig						
Regression	2360 492	7	337 213	23 200	000						
Residual	32064 717	2206	14 535								
Total	34425 209	2213									

Table 8.7.1c. Training	, vs Overa	ll job	satisfactio	on, 200)5-20	03 -	Longit	udinal		
Coefficients										
	Unstandardized		Standardized		6	Comolat				
	Coefficients	Std	Coefficients	l	Sig	Zero-				
	в	Error	Beta			order	Partial	Part		
(Constant)	024	013		1 794	073					
Percent_Workers_Claiming_Too_	- 004	000	- 212	-10 112	000	- 227	- 210	- 208		
Little_Training_for_Job_0503										
Percent_Workers_Claiming_Availa	002	000	103	4 911	000	133	104	101		
bility_Training_Increased_0503										
Average_Expenditure_for_Trainin	000	000	- 046	-2 181	029	- 028	- 046	- 045		
g_0503										
Proportion_Employees_Receiving_	089	036	061	2 515	012	042	053	052		
Classroom_Training_0503										
Proportion_Employees_Receiving_	- 069	031	- 051	-2 252	024	- 051	- 048	- 046		
OntheJob_Training_0503										
Sum_Courses_in_Classroom_Form	- 002	006	- 008	- 343	732	020	- 007	- 007		
at_0503										
Sum_Courses_in_OntheJob_Forma	013	006	047	2 048	041	015	044	042		
t_0503								_		

Tables 8.7.2a, 8.7.2b and 8.7.2c report the R square, ANOVA and regression

coefficients for the *compensation job satisfaction* 2005-2003 data.

33531 896

Total

Tabl	e 8.7.2a.	Training	vs Compens	ation job sati	sfaction, 2	2005-200	03 - 2	Longitudinal		
Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
276	076	073	3 75100	076	25 889	7	2202	000		

Table 8.7.2b.	Training vs Com	pensation jo	b satisfaction,	2005-2003 -	Longitudinal
	Sum of Squares	df	Mean Square	F	Sig
Regression	2549 814	7	364 259	25 889	000
Residual	30982 082	2202	14 070		

2209

Table 8.7.2c. Training vs Compensation job satisfaction, 2005-2003 - Longitudinal											
Coefficients											
	Unstandardized		Standardızed								
	Coefficients	G 1	Coefficients	t	Sig	Correlat	ions	,			
	в	Sta Error	Beta			Zero- order	Partial	Part			
(Constant)	051	013		3 906	000						
Percent_Workers_Claiming_Too_	- 005	000	- 240	-11 627	000	- 239	- 241	- 238			
Little_Training_for_Job_0503											
Percent_Workers_Claiming_Availa	001	000	045	2 1 5 3	031	068	046	044			
bility_Training_Increased_0503											
Average_Expenditure_for_Trainin	000	000	- 013	- 597	551	028	- 013	- 012			
g_0503											
Proportion_Employees_Receiving_	127	035	087	3 593	000	114	076	074			
Classroom_Training_0503											
Proportion_Employees_Receiving_	048	032	034	1 513	130	030	032	031			
OntheJob_Training_0503											
Sum_Courses_in_Classroom_Form	015	006	057	2 310	021	087	049	047			
at_0503											
Sum_Courses_in_OntheJob_Forma	- 009	006	- 033	-1 436	151	- 003	- 031	- 029			
t_0503											

8.8. Training and job satisfaction: Longitudinal (differential) Analysis 2003-1999

Tables 8.8.1a, 8.8.1b and 8.8.1c report the R square, ANOVA and regression

coefficients for the *overall job satisfaction* 2003-1999 data.

Table 8.8.1a. Training vs Overall job satisfaction, 2003-1999 - Longitudinal Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
199	040	036	3 42453	040	11 326	7	1925	000

Table 8.8.1b. Training vs Overall job satisfaction, 2003-1999 - Longitudinal ANOVA											
	Sum of Squares	df	Mean Square	F	Sig						
Regression	929 778	7	132 825	11 326	000						
Residual	22575 235	1925	11 727								
Total	23505 013	1932									

Table 8.8.1c. Training	g vs Overa	ll job	satisfactio	on, 200)3-19	99 -	Longit	udinal
Coefficients								
	Unstandardized		Standardized		C.			
	Coefficients	Std	Coefficients	t	Sig	Zero	ions	1
	в	Error	Beta			order	Partial	Part
(Constant)	- 043	014		-3 028	002			
Percent_Workers_Claiming_Too_	- 002	000	- 104	-4 590	000	- 106	- 104	- 103
Little_Training_for_Job_0399								
Percent_Workers_Claiming_Availa	002	000	127	5 587	000	143	126	125
bility_Training_Increased_0399								
Average_Expenditure_for_Trainin	000	000	- 053	-2 235	026	- 044	- 051	- 050
g_0399								
Proportion_Employees_Receiving_	- 073	029	- 073	-2 538	011	- 019	- 058	- 057
Classroom_Training_0399								
Proportion_Employees_Receiving_	090	029	087	3 045	002	040	069	068
OntheJob_Training_0399								
Sum_Courses_in_Classroom_Form	018	006	093	3 334	001	034	076	074
at_0399								
Sum_Courses_in_OntheJob_Forma	- 014	005	- 070	-2 517	012	- 002	- 057	- 056
t_0399							,	

Tables 8.8.2a, 8.8.2b and 8.8.2c report the R square, ANOVA and regression

coefficients for the *compensation job satisfaction* 2003-1999 data.

Tabl	e 8.8.2a,	Training	vs Compens	ation job sat	isfaction,	2003-19	99 -	Longitudinal		
Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
166	028	024	3 63246	028	7 841	7	1925	000		

Table 8.8.2b. Training vs Compensation job satisfaction, 2003-1999 - Longitudinal ANOVA										
Regression	Sum of Squares	df 7	Mean Square	F 7 841	S1g 000					
Residual	25399 986	1925	13 195							
Total	26124 173	1932								

Table 8.8.2c. Training vs Compensation job satisfaction, 2003-1999 - Longitudinal Coefficients											
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions				
	В	Std Error	Beta			Zero- order	Partial	Part			
(Constant)	- 031	015		-2 095	036						
Percent_Workers_Claiming_Too_	- 002	000	- 096	-4 222	000	- 102	- 096	- 095			
Little_Training_for_Job_0399											
Percent_Workers_Claiming_Availa	002	000	109	4 768	000	117	108	107			
bility_Training_Increased_0399											
Average_Expenditure_for_Trainin	000	000	- 016	- 681	496	002	- 016	- 015			
g_0399											
Proportion_Employees_Receiving_	039	030	037	1 285	199	051	029	029			
Classroom_Training_0399											
Proportion_Employees_Receiving_	016	031	015	517	605	022	012	012			
OntheJob_Training_0399											
Sum_Courses_In_Classroom_Form	010	006	049	1 755	079	035	040	039			
at_0399											
Sum_Courses_in_OntheJob_Forma	- 012	006	- 059	-2 131	033	- 021	- 049	- 048			
t_0399											

8.9. Training and job satisfaction: Longitudinal (differential) Analysis 2005-2001

Tables 8.9.1a, 8.9.1b and 8.9.1c report the R square, ANOVA and regression

coefficients for the *overall job satisfaction* 2005-2001 data.

Table 8.9.1a. Training vs Overall job satisfaction, 2005-2001 - Longitudinal Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
229	052	049	3 85771	052	15 079	7	1908	000

Table 8.9.1b. Training vs Overall job satisfaction, 2005-2001 - Longitudinal ANOVA											
	Sum of Squares	df	Mean Square	F	Sig						
Regression	1570 876	7	224 411	15 079	000						
Residual	28394 688	1908	14 882								
Total	29965 565	1915									

Table 8.9.1c. Training	g vs Overa	ll job	satisfactio	on, 200)5-20	01 -	Longit	udinal		
Coefficients										
	Unstandardized Coefficients	dardized Standardized Coefficients to Sig Correlations								
		Std		_		Zero-				
	В	Error	Beta			order	Partial	Part		
(Constant)	028	014		1 945	052					
Percent_Workers_Claiming_Too_	- 003	000	- 169	-7 453	000	- 187	- 168	- 166		
Little_Training_for_Job_0501										
Percent_Workers_Claiming_Availa	002	000	116	5 1 1 9	000	145	116	114		
bility_Training_Increased_0501										
Average_Expenditure_for_Trainin	000	000	- 061	-2 573	010	- 041	- 059	- 057		
g_0501										
Proportion_Employees_Receiving_	033	035	026	961	337	015	022	021		
Classroom_Training_0501										
Proportion_Employees_Receiving_	- 006	011	- 013	- 586	558	- 010	- 013	- 013		
OntheJob_Training_0501										
Sum_Courses_in_Classroom_Form	- 001	006	- 006	- 223	823	000	- 005	- 005		
at_0501										
Sum_Courses_In_OntheJob_Forma	007	006	030	1 303	193	030	030	029		
t_0501										

Tables 8.9.2a, 8.9.2b and 8.9.2c report the R square, ANOVA and regression

coefficients for the *compensation job satisfaction* 2005-2001 data.

Tabl	e 8.9.2a.	Training	vs Compens	ation job sa	atisfaction,	2005-20	01 -	Longitudinal		
Mod	Model Summary									
					_					
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	e F Change	df1	df2	Sig F Change		
252	063	060	3 95110	063	18 452	7	1906	000		

Table 8.9.2b. Training vs Compensation job satisfaction, 2005-2001 - Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sıg					
Regression	2016 430	7	288 061	18 452	000					
Residual	29754 876	1906	15 611							
Total	31771 306	1913								

Table 8.9.2c. Training vs Compensation job satisfaction, 2005-2001 - Longitudinal Coefficients										
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlat	ions			
	В	Std Error	Beta			Zero- order	Partial	Part		
(Constant)	024	015		1 624	104					
Percent_Workers_Claiming_Too_	- 004	000	- 224	-10 014	000	- 228	- 224	- 222		
Little_Training_for_Job_0501										
Percent_Workers_Claiming_Availa	001	000	039	1 722	085	070	039	038		
bility_Training_Increased_0501										
Average_Expenditure_for_Trainin	000	000	- 072	-3 066	002	- 027	- 070	- 068		
g_0501										
Proportion_Employees_Receiving_	103	035	077	2 895	004	077	066	064		
Classroom_Training_0501										
Proportion_Employees_Receiving_	- 003	011	- 005	- 239	811	004	- 005	- 005		
OntheJob_Training_0501										
Sum_Courses_in_Classroom_Form	006	006	026	985	325	052	023	022		
at_0501										
Sum_Courses_in_OntheJob_Forma	004	006	015	647	518	028	015	014		
t_0501										

8.10. Training and job satisfaction: Longitudinal (differential) Analysis 2005-1999

Tables 8.10.1a, 8.10.1b and 8.10.1c report the R square, ANOVA and regression

coefficients for the *overall job satisfaction* 2005-1999 data.

Table 8.10.1a. Training vs Overall job satisfaction, 2005-1999 - Longitudinal Model Summary

		Adjusted	Std Error					
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change
253	064	060	3 51389	064	18 056	7	1848	000

Table 8.10.1b. Training vs Overall job satisfaction, 2005-1999 - Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	1560 610	7	222 944	18 056	000					
Residual	22818 002	1848	12 347							
Total	24378 611	1855								

Table 8.10.1c. Training vs Overall job satisfaction, 2005-1999 - Longitudinal										
Coefficients										
	Unstandardized Coefficients		Standardızed Coefficients	t	Sig	Correlat	ions			
	В	Std Error	Beta			Zero- order	Partial	Part		
(Constant)	031	014		2 143	032					
Percent_Workers_Claiming_Too_	- 003	000	- 168	-7 348	000	- 178	- 168	- 165		
Little_Training_for_Job_0599							1			
Percent_Workers_Claiming_Availa	002	000	138	6 036	000	140	139	136		
bility_Training_Increased_0599										
Average_Expenditure_for_Trainin	000	000	- 065	-2 679	007	- 099	- 062	- 060		
g_0599										
Proportion_Employees_Receiving_	- 079	032	- 073	-2 441	015	- 063	- 057	- 055		
Classroom_Training_0599										
Proportion_Employees_Receiving_	044	030	045	1 506	132	- 029	035	034		
OntheJob_Training_0599										
Sum_Courses_in_Classroom_Form	- 004	005	- 021	- 775	439	- 076	- 018	- 017		
at_0599										
Sum_Courses_in_OntheJob_Forma	- 013	005	- 066	-2 387	017	- 052	- 055	- 054		
t_0599										

Tables 8.10.2a, 8.10.2b and 8.10.2c report the R square, ANOVA and regression

coefficients for the *compensation job satisfaction* 2005-1999 data.

Tabl Mod	Table 8.10.2a. Training vs Compensation job satisfaction, 2005-1999 - Longitudinal Model Summary										
	· · · · · · · · · · · · · · · · · · ·										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change			
267	071	068	3 50994	071	20 198	7	1848	000			

Table 8.10.2b. Training vs Compensation job satisfaction, 2005-1999 - Longitudinal ANOVA

	Sum of Squares	df	Mean Square	F	Sig
Regression	1741 823	7	248 832	20 198	000
Residual	22766 829	1848	12 320		
Total	24508 652	1855			

Table 8.10.2c. Training vs Compensation job satisfaction, 2005-1999 - Longitudinal										
Coefficients				·	-	.				
	Unstandardized		Standardized		S.a	Camalat				
	Coefficients	Std	Coefficients	ι 	Sig	Zero-	lons			
	В	Error	Beta			order	Partial	Part		
(Constant)	003	014		232	817					
Percent_Workers_Claiming_Too_	- 003	000	- 167	-7 336	000	- 174	- 168	- 164		
Little_Training_for_Job_0599										
Percent_Workers_Claiming_Availa	002	000	106	4 629	000	103	107	104		
bility_Training_Increased_0599										
Average_Expenditure_for_Trainin	000	000	016	675	500	003	016	015		
g_0599										
Proportion_Employees_Receiving_	- 015	032	- 014	- 475	635	- 021	- 011	- 011		
Classroom_Training_0599										
Proportion_Employees_Receiving_	- 085	030	- 086	-2 887	004	- 124	- 067	- 065		
OntheJob_Training_0599										
Sum_Courses_in_Classroom_Form	023	005	113	4 2 1 4	000	040	098	094		
at_0599										
Sum_Courses_in_OntheJob_Forma	- 028	005	- 146	-5 297	000	- 106	- 122	- 119		
t_0599										

8.11. Training and job satisfaction: Summary of Cross-sectional Analysis and Longitudinal (differential) Analysis

8.11.1 Training and overall job satisfaction

Table 8.11.1a and 8.11.1b show the summary of training and overall job satisfaction, <u>Median Overall Satisfaction</u>, for the cross-sectional and longitudinal analysis, respectively. As discussed in Chapter 3, we could expect that higher levels of training would be associated with higher levels of job satisfaction, and vice versa. The results seem to confirm this expectation, but only for those variables that measured training as perceived by the worker.

This trend can already be seen from the results of the variable that measures the percentage of employees claiming that the amount of training is too little for the demands of the job: <u>Percent Workers Claiming Too Little Training for Job</u>. As noted previously, we can assume that a large value of this variable underlies a lower level of training, at least as perceived by the employees. Recall also that, to improve clarity, we recoded the original job satisfaction data so that higher values of the job satisfaction variables, in this case <u>Median Overall Satisfaction</u>, signaled increasing levels of satisfaction (see Chapter 5 for details). Accordingly, if the effect of training on job satisfaction is as hypothesized above, then we would expect an inverse relationship between these two variables. For the cross-sectional analysis, we would expect that higher values of the variable <u>Percent Workers Claiming Too Little Training for Job</u> be associated with lower values of the variable <u>Median Overall Satisfaction</u>, and vice versa. For the longitudinal analysis, we would expect that increases (or decreases) in the

training variable be associated with decreases (increases) of the job satisfaction variable. The results provide strong support for the inverse relationship between these two variables. The cross-sectional analysis, see Table 8.11.1a, show a significant and negative relation for all four years under investigation. The inverse relationship between these two variables is also found in the longitudinal analysis: Table 8.11.1b show a significant relationship in the expected direction for all six pairs of years.

The other variable based on the level of training as perceived by the employee is <u>Percent Workers Claiming Availability Training Increased</u>, which measures the percentage of employees claiming that the availability of training has increased. As noted, if we assume that the employees' perception is correct, then a large value of this variable signals a higher level of training, and vice versa. Therefore, we should observe a direct, positive, relationship between this training variable and overall job satisfaction. For the cross-sectional analyses, we would expect that higher values of the <u>Percent Workers Claiming Availability Training Increased</u> to be associated with higher values of <u>Median Overall Satisfaction</u>, and vice versa. Similarly for the longitudinal analyses, we would expect that increases of the training variable to be associated with increases in overall job satisfaction, and vice versa. Also for this measure of training, the results indicate a strong association with overall job satisfaction: all crosssectional and all longitudinal analyses in Tables 8.11.1a and 8.11.1b show a significant and positive negative relation.

With regards to the other training variables, none show a consistent pattern of results for the cross-sectional analyses: at best the regression coefficients are significantly different from zero only in two cases out of four.

For the longitudinal analyses, there seems to be some effect of training expenditure (variable <u>Average Expenditure for Training</u>). Increases in training expenditures should result in increases in overall job satisfaction, and vice versa. The data in Table 8.11.1b show the expected positive relation in all six analyses; the effect is significant (p<0.05) in five out of six cases and very close to the significance level in the last case (p=0.74).

The variable <u>Sum Courses in OntheJob Format</u>, which measure the number of on-the-job training courses, also exhibited numerous significant relations with overall job satisfaction. In general, we would expect higher values of the variable to be associated with higher values of satisfaction, and vice versa. Unfortunately, the data suggest a contrasting pattern. There is a significant effect in five of the six longitudinal analyses, but only in two cases the direction of the effect is in the expected direction.

8.11.2 Training and job satisfaction related to compensation

The second measure of job satisfaction was based on monetary compensation (*Median Compensation Satisfaction*). The summary results for this variable are presented in Table 8.11.2a (cross-sectional analyses) and Table 8.11.2b (longitudinal analyses).

The results of the two measures of training based on employees' perceptions:

 Percent Workers Claiming Too Little Training for Job
 and

 Percent Workers Claiming Availability Training Increased
 were substantially the

 same as for overall job satisfaction for both cross-sectional and longitudinal analyses.

The results for the other training variables are less consistent and differ between types of analyses. In the cross-sectional analyses, four variables exhibit significant relationships of four Table three times 8.11.2a). out (see Average Expenditure for Training and the **Proportion Employees Receiving Classroom Training** show positive relationships: that is increases in the values of these variables were associated with increases in the

compensation satisfaction variable, and vice versa. On the contrary, <u>Proportion Employees Receiving OntheJob Training</u> and

<u>Sum Courses in OntheJob Format</u> were characterized by negative relationships. These latter results are rather surprising since they indicate that an increase on-the-job training was actually associated with a decrease in compensation satisfaction. As such, they suggest that acquiring on-the-job skills carry an expectation of higher monetary compensation.

The results of the cross-sectional analyses were not corroborated by those of the longitudinal analyses, however. The only result that matched in part the findings of the cross-sectional analyses was for the *Proportion Employees Receiving Classroom Training* variable that exhibited significant relationships four out of six times (see Table 8.11.2b).

In summary, these results suggest that the level of training can positively affect job satisfaction. However, this relation appears to depend more consistently on the perceived level of training (e.g., perceived adequacy or availability of training) than on the actual level of training (e.g., expenditure or number of courses offered).

		1999		2001		2003		2005
	Coefficients		Coefficients		Coefficients		Coefficients	Sıg.
	В	Sig.	В	Sig.	В	Sig.	В	
Percent_Workers_Claiming_Too_Little_Training_for_Job	- 003	.000	- 004	.000	- 004	.000	- 003	.000
Percent_Workers_Claiming_Availability_Training_Increased	004	.000	004	.000	002	.000	003	.000
Average_Expenditure_for_Training	000	.001	000	417	000	.042	000	165
Proportion_Employees_Receiving_Classroom_Training	058	.029	013	618	- 056	.027	019	388
Proportion_Employees_Receiving_OntheJob_Training	- 092	.000	002	852	026	245	- 040	.052
Sum_Courses_in_Classroom_Format	- 010	.015	- 007	168	- 007	171	004	419
Sum_Courses_in_OntheJob_Format	- 010	.019	004	356	- 004	440	- 004	404

Table 8.11.1b - Training and	l Overal	Satisfa	ction –	Summary	/ Longitu	dinal Reg	ression Co	oefficient	ts			
		2001-		2003-		2005-		2003-		2005-		2005-
		1999		2001		2003		1999		2001		1999
	Coeff.		Coeff		Coeff		Coeff.		Coeff.		Coeff.	
	В	Sig	B	Sıg	B	Sig	B	Sig.	B	Sig.	В	Sig.
Percent_Workers_Claiming_Too_Little_	- 004	.000	- 005	.000	- 004	.000	- 002	.000	- 003	.000	- 003	.000
Percent_Workers_Claiming_Availability	002	.000	002	.000	002	.000	002	.000	002	.000	002	.000
Average_Expenditure_for_Training	000	.001	000	074	000	.029	000	.026	000	.010	000	.007
Proportion_Employees_Receiving_Class	014	622	- 051	105	089	.012	- 073	.011	033	337	- 079	.015
Proportion_Employees_Receiving_Onthe	- 071	.003	052	.039	- 069	.024	090	.002	- 006	558	044	132
Sum_Courses_in_Classroom_Format	008	143	011	.039	- 002	732	018	.001	- 001	823	- 004	439
Sum_Courses_in_OntheJob_Format	013	009	- 023	.000	013	.041	- 014	.012	007	193	- 013	.017

Table 8.11.2a - Training and Compensati	on Satisfact	ion – Su	immary Cros	s-Sectior	nal Regressio	n Coeffic	cients	
		1999		2001		2003		2005
	Coefficients		Coefficients		Coefficients	Sig	Coefficients	Sig
	В	Sig	В	Sig	В		В	
Percent_Workers_Claiming_Too_Little_Training_for_Job	- 002	.000	- 004	.000	- 004	.000	- 006	.000
Percent_Workers_Claiming_Availability_Training_Increased	003	.000	002	.000	003	.000	000	113
Average_Expenditure_for_Training	000	.000	000	195	000	.003	000	.001
Proportion_Employees_Receiving_Classroom_Training	096	.002	091	.002	031	200	137	.000
Proportion_Employees_Receiving_OntheJob_Training	- 140	.000	- 090	.000	- 032	154	- 151	.000
Sum_Courses_in_Classroom_Format	002	633	004	475	- 004	485	010	.036
Sum_Courses_In_OntheJob_Format	- 017	.000	- 011	.029	000	934	- 009	.046

Table 8.11.2b - Training and	Comper	sation Sa	atisfactic	on – Sun	nmary Lo	ngitudina	l Regress	ion Coeff	ficients			
		2001-		2003-		2005-		2003-		2005-		2005-
		1999		2001		2003		1999		2001		1999
			Coeff									
	Coeff			1	Coeff		Coeff		Coeff		Coeff	
	В	Sig	В	Sig	В	Sig	B	Sig	В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_T	- 005	.000	- 005	.000	- 005	.000	- 002	.000	- 004	.000	- 003	.000
Percent Workers Claiming Availability	003	.000	002	.000	001	.031	002	.000	001	085	002	.000
Average_Expenditure_for_Training	000	377	000	.038	000	551	000	496	000	.002	000	500
Proportion_Employees_Receiving_Classr	055	.054	065	.056	127	.000	039	199	103	.004	- 015	635
Proportion_Employees_Receiving_OntheJ	- 085	.001	- 002	855	048	130	016	605	- 003	811	- 085	.004
Sum_Courses_in_Classroom_Format	015	.005	- 005	400	015	.021	010	079	006	325	023	.000
Sum_Courses_in_OntheJob_Format	- 003	544	003	638	- 009	151	- 012	.033	004	518	- 028	.000
		1 1	1	1 1	1	1	1		1			1

9 Chapter: The effect of Training Turnover, Absenteeism, Job Satisfaction on Productivity

The results reported in the last three chapters were very interesting and in line, at least partially, with the notion of an indirect effect of training on productivity. Indeed, we found some strong relations between training on one hand and turnover, job satisfaction, and to a lesser extent absenteeism, on the other.

To investigate further the existence of the indirect effect we examined, using the regression approach, the effect of training, absenteeism, turnover, and job satisfaction on productivity. We expected all four factors to have some effect on productivity: the effect of training would confirm the direct effect of training on productivity, whereas the effect of the other three factors would prove the existence of the indirect effect hypothesized.

The literature indicates that, in addition to the four factors mentioned above, several other factors might affect productivity. Since the WES does provide information on some of these factors, we included them in the analysis as control variables. The regression analysis was performed on both cross-sectional and longitudinal data. Both analyses included the following variables (details regarding these variables are available in Chapter 5):

- PRODUCTIVITY

 Value added per worker
- TURNOVER

 Average turnover was measured as the number of resignations divided by total number of employees adjusted to account for peaks in seasonal employment, if any (*Turnover*)
- ABSENTEEISM
 Average of days of paid sick leave (<u>Average Days of Sick Paid Leave</u>)
 Average of days of other paid leave (<u>Average Days of Other Paid Leave</u>)
 Average of days of other unpaid leave (<u>Average Days of Unpaid Leave</u>)

4) JOB SATISFACTION

-Median overall satisfaction of individuals in the workplace (<u>Median Overall Satisfaction</u>). -Median satisfaction in compensation of individuals at the workplace (<u>Median Compensation Satisfaction</u>)

5) TRAINING

-Average Training Expenditure (Average Expenditure for Training) -Percentage of workers claiming that the amount of training available was too little for the demands of the job (Percent Workers Claiming Too Little Training for Job) -Percentage of workers claiming that the amount of training available to employees has increased (Percent Workers Claiming Availability Training Increased). -Sum of different types of courses provided in classroom format (Sum Courses in Classroom Format) of dıfferent through -Sum types of courses provided on-the job training (Sum Courses in OntheJob Format) -Proportion of employees who received classroom training (Proportion Employees Receiving Classroom Training) received -Proportion employees job-training of who on-the (Proportion Employees Receiving OntheJob Training)

6) CONTROL VARIABLES

-Age of the organization measured as time at the last address (Organization Age) -Number of employees (*Total_Number_of_Employees*) -Percentage of total sales from products & services that are exported to USA & World (Percentage ExportSales) -Percentage of employees using computers (Proportion Employees Using Computers) -Average age of workforce (Average Age Workforce). -Percentage of employees having kids 1-6 years of age (Percent Workers Having Young Kids) -Average pay (Workplace Average Pay) -Average family income from other sources other than employment (Average Family Other Income) -Average tenure of workforce (Average Workforce Tenure) -Sum of all HR practices related to work organization (Sum HR Practices Organization of Work) -Sum of all HR practices related to work compensation practices (Sum HR Practices Compensation) -Average number of promotions (Average Workplace Promotions) -Proportion of managers, professional, technical/trade as measure of skıll level (Proportion Fulltime HighSkilled Workers)

-Percentage of unionized workers (*Proportion Unionized Workforce*)

The results of the cross-sectional and longitudinal analyses are presented in the following sections.

9.1. Cross-sectional Analysis for 1999

Tables 9.1a and 9.1b report the R square and ANOVA for the 1999 data. Table 9.1c reports the regression coefficients, standardized and non-standardized, with their associated significance levels.

Tabl	Table 9.1a. Determinants of Productivity, 1999 – Cross-Sectional Model Summary									
		Adjusted	Std Error							
R	R Square	R Square	of the Estimate	R Square Change	F Change	dfl	df2	Sig F Change		
302	091	082	1 40338E+06	091	10 304	27	2768	000		

Table 9.1b. Determinants of Productivity, 1999 - Cross-Sectional ANOVA									
	Sum of Squares	df	Mean Square	F	Sig				
Regression	5 479E+14	27	2 029E+13	10 304	000				
Residual	5 452E+15	2768	1 969E+12						
Total	5 999E+15	2795							

Table 9.1c. Determinar	nts of Produc	tivity, 1999	- Cross-Se	ctional	Coef	ficient	s	
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correla	tions	
	В	Std Error	Beta			Zero- order	Partial	Part
Constant	-71717 422	39680 105		-1 807	071			
Percent_Workers_Claiming_To	252 210	163 955	032	1 538	124	062	029	028
Percent_Workers_Claiming_Av	312 576	153 724	043	2 033	042	076	039	037
Average_Expenditure_for_Train	7 504	8 938	018	840	401	108	016	015
Proportion_Employees_Receivi	5851 304	14494 933	012	404	686	071	008	007
Proportion_Employees_Receivi	-1743 650	14179 385	- 004	- 123	902	- 006	- 002	- 002
Sum_Courses_in_Classroom_Fo	6227 968	2227 383	084	2 796	005	096	053	051
Sum_Courses_In_OntheJob_For	-3590 124	2302 225	- 045	-1 559	119	004	- 030	- 028
Average_Days_of_Sick_Paid_L	317 882	1488 789	004	214	831	042	004	004
Average_Days_of_Other_Paid_	-1025 032	1868 472	- 010	- 549	583	029	- 010	- 010
Average_Days_of_Unpaid_Leav	-710 355	664 154	- 020	-1 070	285	- 061	- 020	- 019
Turnover_99	-2697 628	17854 727	- 003	- 151	880	- 035	- 003	- 003

Median_Overall_Satisfaction_9	14310 406	10419 737	031	1 373	170	064	026	025
Median_Compensation_Satisfac	3363 361	9101 675	008	370	712	073	007	007
Organization_Age_99	422 861	311 286	029	1 358	174	033	026	025
Total_Number_of_Employees_9	53 635	54 427	019	985	324	051	019	018
Percentage_ExportSales_99	-172 760	196 730	- 017	- 878	380	026	- 017	- 016
Proportion_Employees_Using_	58213 550	12255 426	099	4 750	000	132	090	086
Average_Age_Workforce_99	1188 185	653 016	041	1 820	069	076	035	033
Percent_Workers_Having_Youn	264 095	176 487	028	1 496	135	043	028	027
Workplace_Average_Pay_99	1 918	234	181	8 207	000	230	154	149
Average_Family_Other_Income	740	628	022	1 178	239	041	022	021
Average_Workforce_Tenure_99	-1253 135	1060 734	- 029	-1 181	238	045	- 022	- 021
Sum_HR_Practices_Compensati	4345 639	4043 735	022	1 075	283	103	020	019
Sum_HR_Practices_Organizatio	-8479 818	2886 218	- 063	-2 938	003	- 024	- 056	- 053
Average_Workplace_Promotion	-4936 946	5693 936	- 018	- 867	386	041	- 016	- 016
Proportion_Fulltime_HighSkille	-95253 497	14527 084	- 126	-6 557	000	- 065	- 124	- 119
Proportion_Unionized_Workfor	-22046 025	14923 192	- 029	-1 477	140	- 009	- 028	- 027

9.2. Cross-sectional Analysis for 2001

Table 9.2a, Table 9.2b, Table 9.2c report the R square, ANOVA, and regression coefficients, respectively, for the 2001 data.

Tabl	Table 9.2a. Determinants of Productivity, 2001 - Cross-Sectional Model Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
290	084	075	1 12865E+06	084	9 141	27	2686	000		

Table 9.2b. Determinants of Productivity, 2001 - Cross-Sectional ANOVA								
	Sum of Squares	Df	Mean Square	F	Sig			
Regression	3 144E+14	27	1 164E+13	9 141	000			

Residual	3 422E+15	2686	1 274E+12	
Total	3 736E+15	2713		

Table 9.2c. Determinar	nts of Product	ivity, 2001	- Cross-Se	ctional	Coef	ficient	S		
	Unstandardized		Standardized	+	Sig	Correla	Correlations Zero- order Partial I - 013 - 032 - 100 042 - 075 000 - 064 020 - 014 001 - 060 - 014 - 047 - 002 - 059 030 - - 018 - 006 - - 032 - 015 - - 032 - 015 - 003 004 - 071 039 - 034 013 - 037 - 007 - 019 001 -		
	coenicients		Coefficients		Jig	Zero-			
Quarter	B	Std Error	Beta	027	071	order	Partial	Part	
Constant	1291 226	35132 684		037	971				
Percent_Workers_Claiming_Too	-241 993	147 800	- 034	-1 637	102	- 013	- 032	- 030	
Percent_Workers_Claiming_Av	276 554	125 641	045	2 201	028	100	042	041	
Average_Expenditure_for_Train	- 002	6 413	000	000	1 00	075	000	000	
Proportion_Employees_Receivin	10914 052	10417 583	025	1 048	295	064	020	019	
Proportion_Employees_Receivin	82 024	3151 929	000	026	979	014	001	000	
Sum_Courses_in_Classroom_Fo	-1363 591	1885 046	- 021	- 723	470	060	- 014	- 013	
Sum_Courses_In_OntheJob_For	-206 214	1837 728	- 003	- 112	911	047	- 002	- 002	
Average_Days_of_Sick_Paid_L	2141 229	1375 352	030	1 557	120	059	030	029	
Average_Days_of_Other_Paid_	-238 605	734 211	- 006	- 325	745	- 018	- 006	- 006	
Average_Days_of_Unpaid_Leav	-528 179	690 712	- 014	- 765	445	- 032	- 015	- 014	
Turnover_01	2554 727	12902 832	004	198	843	- 050	004	004	
Median_Overall_Satisfaction_01	18149 693	8952 855	048	2 027	043	071	039	037	
Median_Compensation_Satisfact	-23286 776	8203 534	- 068	-2 839	005	043	- 055	- 052	
Organization_Age_01	83 866	190 916	009	439	660	003	008	008	
Total_Number_of_Employees_0	28 138	40 756	014	690	490	034	013	013	
Percentage_ExportSales_01	-72 429	161 848	- 009	- 448	655	032	- 009	- 008	
Proportion_Employees_Using_C	27576 393	10656 744	054	2 588	010	121	050	048	
Average_Age_Workforce_01	-206 105	585 352	- 008	- 352	725	037	- 007	- 007	
Percent_Workers_Having_Youn	11 063	152 752	001	072	942	019	001	001	
Workplace_Average_Pay_01	1 987	166	253	11 938	000	263	224	220	
Average_Family_Other_Income	-1 174	714	- 032	-1 644	100	023	- 032	- 030	
Average_Workforce_Tenure_01	-385 850	906 728	- 011	- 426	670	059	- 008	- 008	

Sum_HR_Practices_Compensati	2662 462	3405 033	016	782	434	061	015	014
Sum_HR_Practices_Organizatio	-1295 759	2649 204	- 010	- 489	625	- 015	- 009	- 009
Average_Workplace_Promotion	9164 919	4618 429	043	1 984	047	091	038	037
Proportion_Fulltime_HighSkille	-4894 850	12017 126	- 008	- 407	684	025	- 008	- 008
Proportion_Unionized_Workfor	-3386 804	11639 132	- 006	- 291	771	006	- 006	- 005

9.3. Cross-sectional Analysis for 2003

Table 9.3a, Table 9.3b, Table 9.3c report the R square, ANOVA, and regression coefficients, respectively, for the 2003 data.

Table 9.3a. Determinants of Productivity, 2003 - Cross-Sectional Model Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change	
384	148	139	955381 80072	148	17 720	27	2764	000	

Table 9.3b. Determinants of Productivity, 2003 - Cross-Sectional ANOVA							
	Sum of Squares	df	Mean Square	F	Sig		
Regression	4 367E+14	27	1 617E+13	17 720	000		
Residual	2 523E+15	2764	9 128E+11				
Total	2 960E+15	2791					

Table 9.3c. Determinants of Productivity, 2003 - Cross-Sectional Coefficients								
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlations		
	В	Std Error	Beta			Zero- order Partial		Part
Constant	-76006 907	30850 444		-2 464	014			
Percent_Workers_Claiming_Too	-205 909	125 969	- 031	-1 635	102	- 008	- 031	- 029
Percent_Workers_Claiming_Av	-387 981	100 628	- 075	-3 856	000	- 001	- 073	- 068
Average_Expenditure_for_Train	247	6 984	001	035	972	101	001	001
Proportion_Employees_Receivin	-13387 167	7864 608	- 056	-1 702	089	036	- 032	- 030
Proportion_Employees_Receivin	1081 773	7335 439	005	147	883	012	003	003

Sum_Courses_in_Classroom_Fo	5134 448	1609 563	088	3 190	001	078	061	056
Sum_Courses_In_OntheJob_For	-1603 941	1674 207	- 025	- 958	338	008	- 018	- 017
Average_Days_of_Sick_Paid_L	-1187 490	893 241	- 024	-1 329	184	011	- 025	- 023
Average_Days_of_Other_Paid_	-468 912	394 977	- 022	-1 187	235	- 027	- 023	- 021
Average_Days_of_Unpaid_Leav	-1794 692	721 539	- 045	-2 487	013	- 064	- 047	- 044
Turnover_03	8025 003	14263 832	011	563	574	- 053	011	010
Median_Overall_Satisfaction_03	30229 263	7986 833	081	3 785	000	116	072	066
Median_Compensation_Satisfact	10231 686	6967 742	031	1 468	142	106	028	026
Organization_Age_03	467 340	136 340	065	3 428	001	113	065	060
Total_Number_of_Employees_0	-9 757	30 868	- 006	- 316	752	013	- 006	- 006
Percentage_ExportSales_03	-225 942	142 085	- 030	-1 590	112	- 002	- 030	- 028
Proportion_Employees_Using_C	23450 190	9160 819	050	2 560	011	132	049	045
Average_Age_Workforce_03	-1460 390	488 931	- 066	-2 987	003	037	- 057	- 052
Percent_Workers_Having_Youn	214 841	132 879	029	1 617	106	074	031	028
Workplace_Average_Pay_03	2 117	135	325	15 695	000	328	286	276
Average_Family_Other_Income	008	385	000	020	984	- 003	000	000
Average_Workforce_Tenure_03	594 226	715 909	019	830	407	073	016	015
Sum_HR_Practices_Compensati	-6229 005	2857 240	- 043	-2 180	029	023	- 041	- 038
Sum_HR_Practices_Organizatio	4082 386	2197 286	037	1 858	063	021	035	033
Average_Workplace_Promotion	5962 866	3407 214	035	1 750	080	095	033	031
Proportion_Fulltime_HighSkille	-29295 944	10039 313	- 054	-2 918	004	- 020	- 055	- 051
Proportion_Unionized_Workfor	-18979 259	10890 212	- 034	-1 743	081	- 034	- 033	- 031

9.4. Cross-sectional Analysis for 2005

The R square, ANOVA, and regression coefficients for the 2005 data are shown in Table 9.4a, Table 9.4b, and Table 9.4c, respectively.
Tabl	Table 9.4a. Determinants of Productivity, 2005 - Cross-Sectional Model Summary									
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change		
282	080	072	1 14823E+06	080	10 001	27	3124	000		

Table 9.4b. D	Determinants of Prod	luctivity, 20	05 - Cross-Section	al ANOVA	
	Sum of Squares	df	Mean Square	F	Sig
Regression	3 560E+14	27	1 319E+13	10 001	000
Residual	4 119E+15	3124	1 318E+12		
Total	4 475E+15	3151			

Table 9.4c. Determinar	nts of Producti	vity, 2005	- Cross-Se	ctional	Coef	ficient	S				
	Unstandardized		Standardized	+	Sig	Correla	Correlations				
	Coefficients		Coefficients	l	Sig	Zero-		[·····			
	В	Std Error	Beta			order	Partial	Part			
Constant	8364 101	35752 665		234	815						
Percent Workers Claiming Too	48 431	137 452	007	352	725	024	006	006			
		107 102		552		•=•		000			
Percent_Workers_Claiming_Av	-152 303	124 459	- 023	-1 224	221	033	- 022	- 021			
Average Expenditure for Train	7 131	7 799	019	914	361	048	016	016			
	7 101				501	0.10	010	010			
Proportion_Employees_Receivin	-9808 431	9498 028	- 035	-1 033	302	023	- 018	- 018			
Proportion Employees Passivin	1669 715	0072 279	006	194	954	015	003	002			
rioportion_Employees_Receivin	1008 /15	9075 578	000	104	0.54	015	003	003			
Sum_Courses_in_Classroom_Fo	-845 055	1839 649	- 012	- 459	646	021	- 008	- 008			
Sum_Courses_in_OntheJob_For	2177 354	18/8 212	029	1 1 59	246	028	021	020			
Average_Days_of_Sick_Paid_L	2484 619	1574 854	029	1 578	115	077	028	027			
Average_Days_of_Other_Paid_	-663 959	647 349	- 018	-1 026	305	006	- 018	- 018			
Average_Days_of_Unpaid_Leav	-824 241	557 835	- 027	-1 478	140	- 063	- 026	- 025			
Turnover_05	-4997 736	14524 872	- 007	- 344	731	- 057	- 006	- 006			
Median Overall Satisfaction 05	2719 376	8282 587	007	328	743	031	006	006			
Median_Compensation_Satisfact	-13119 651	7952 592	- 034	-1 650	099	014	- 030	- 028			
Organization Age 05	426 025	157 879	053	2 698	007	089	048	046			
organization_rige_05											
Total_Number_of_Employees_0	17 730	37 051	009	479	632	018	009	008			
Percentage ExportSales 05	-276 044	158 581	- 031	-1 741	082	023	- 031	- 030			
	L			_							

Proportion_Employees_Using_C	6311 265	10945 461	012	577	564	098	010	010
Average_Age_Workforce_05	408 842	534 318	016	765	444	064	014	013
Percent_Workers_Having_Youn	-107 049	167 376	- 012	- 640	522	017	- 011	- 011
Workplace_Average_Pay_05	1 867	139	266	13 448	000	262	234	231
Average_Family_Other_Income	- 598	547	- 019	-1 092	275	010	- 020	- 019
Average_Workforce_Tenure_05	-378 027	790 655	- 011	- 478	633	037	- 009	- 008
Sum_HR_Practices_Compensati	-2917 435	3451 684	- 016	- 845	398	040	- 015	- 015
Sum_HR_Practices_Organizatio	1856 416	2321 452	015	800	424	001	014	014
Average_Workplace_Promotion	4610 591	3219 772	028	1 432	152	032	026	025
Proportion_Fulltime_HighSkille	-9648 492	11664 131	- 015	- 827	408	010	- 015	- 014
Proportion_Unionized_Workfor	-13424 631	13313 356	- 020	-1 008	313	- 010	- 018	- 017

9.5. Differential Analysis 2001-1999

The R square, ANOVA, and regression coefficients for the 2001-1999 data are shown in Table 9.5a, Table 9.5b, and Table 9.5c, respectively.

Tabl	Table 9.5a. Determinants of Productivity, 2001-1999 - Longitudinal Model Summary								
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change	
305	093	083	1 21807E+06	093	8 935	25	2176	000	

Table 9.5b. Determinants of Productivity, 2001-1999 - Longitudinal ANOVA										
Sum of Squares df Mean Square F S1g										
Regression	3 314E+14	25	1 326E+13	8 935	000					
Residual	3 229E+15	2176	1 484E+12							
Total	Total 3 560E+15 2201									

Table 9.5c. Determinan	ts of Producti	vity, 2001	-1999 - Lor	ngitudi	nal Co	oeffici	ents				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correla	itions				
	В	Std Error	Beta			Zero- order Partial Part					

Constant	-21739 630	4988 120		-4 358	000			
Percent_Workers_Claiming_Too	-224 239	138 162	- 036	-1 623	105	- 013	- 035	- 033
Percent_Workers_Claiming_Av	298 526	130 377	050	2 290	022	056	049	047
Average_Expenditure_for_Train	-8 731	7 491	- 026	-1 166	244	019	- 025	- 024
Proportion_Employees_Receivin	5445 235	9598 534	014	567	571	044	012	012
Proportion_Employees_Receivin	615 225	3475 661	004	177	860	015	004	004
Sum_Courses_in_Classroom_Fo	8488 981	1847 892	117	4 594	000	099	098	094
Sum_Courses_In_OntheJob_For	-1915 777	1685 821	- 027	-1 136	256	027	- 024	- 023
Average_Days_of_Sick_Paid_L	3558 618	1167 343	063	3 048	002	073	065	062
Average_Days_of_Other_Paid_	161 984	837 221	004	193	847	- 006	004	004
Average_Days_of_Unpaid_Leav	-656 799	555 802	- 025	-1 182	237	- 014	- 025	- 024
Turnover_0199	-11519 327	18249 144	- 014	- 631	528	- 004	- 014	- 013
Median_Overall_Satisfaction_01	-27490 395	8111 248	- 079	-3 389	001	- 070	- 072	- 069
Median_Compensation_Satisfact	-6175 583	7809 391	- 019	- 791	429	- 010	- 017	- 016
Total_Number_of_Employees_0	58 610	119 566	010	490	624	- 008	011	010
Percentage_ExportSales_0199	-728 750	253 569	- 065	-2 874	004	- 094	- 061	- 059
Proportion_Employees_Using_C	-23965 680	16818 237	- 030	-1 425	154	- 030	- 031	- 029
Percent_Workers_Having_Youn	-31 445	156 126	- 004	- 201	840	- 022	- 004	- 004
Workplace_Average_Pay_0199	2 156	229	197	9 411	000	195	198	192
Average_Family_Other_Income	1 496	584	054	2 559	011	070	055	052
Average_Workforce_Tenure_01	434 789	952 136	010	457	648	046	010	009
Sum_HR_Practices_Compensati	-19371 539	3790 906	- 107	-5 110	000	- 110	- 109	- 104
Sum_HR_Practices_Organizatio	-1902 383	2681 198	- 015	- 710	478	004	- 015	- 014
Average_Workplace_Promotion	6878 877	5009 663	030	1 373	170	048	029	028
Proportion_Fulltime_HighSkille	-17754 931	17090 486	- 022	-1 039	299	016	- 022	- 021
Proportion_Unionized_Workfor	49003 884	17388 115	061	2 818	005	090	060	058

9.6. Differential Analysis 2003-2001

The R square, ANOVA, and regression coefficients for the 2003-2001 data are shown in Table 9.6a, Table 9.6b, and Table 9.6c, respectively.

Tabl	Table 9.6a. Determinants of Productivity, 2003-2001 - Longitudinal Model Summary										
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig_F Change			
296	088	076	434251 03550	088	7 612	25	1976	000			

Table 9.6b. Determinants of Productivity, 2003-2001 - Longitudinal ANOVA										
	Sum of Squares	df	Mean Square	F	Sig					
Regression	3 589E+13	25	1 435E+12	7 612	000					
Residual	3 726E+14	1976	1 886E+11							
Total	4 085E+14	2001								

Table 9.6c. Determinants of Productivity, 2003-2001 - Longitudinal Coefficients Unstandardized Standardized											
	Unstandardızed Coefficients		Standardızed Coefficients	t	Sig	Correla	ations				
	В	Std Error	Beta			Zero- order	Partial	Part			
Constant	-345 499	1683 768		- 205	837						
Percent_Workers_Claiming_Too	-93 306	52 966	- 041	-1 762	078	- 064	- 040	- 038			
Percent_Workers_Claiming_Av	84 276	43 959	044	1 917	055	065	043	041			
Average_Expenditure_for_Train	9 331	3 106	069	3 004	003	053	067	065			
Proportion_Employees_Receivin	1346 446	4127 566	008	326	744	- 007	007	007			
Proportion_Employees_Receivin	306 563	1213 879	006	253	801	013	006	005			
Sum_Courses_in_Classroom_Fo	-2117 114	741 050	- 076	-2 857	004	- 086	- 064	- 061			
Sum_Courses_in_OntheJob_For	-533 549	727 206	- 017	- 734	463	- 048	- 017	- 016			
Average_Days_of_Sick_Paid_L	-754 818	363 622	- 046	-2 076	038	- 036	- 047	- 045			
Average_Days_of_Other_Paid_	14 335	200 139	002	072	943	- 003	002	002			
Average_Days_of_Unpaid_Leav	-73 696	244 056	- 007	- 302	763	- 031	- 007	- 006			
Turnover_0301	6744 827	5963 912	025	1 131	258	054	025	024			
Median_Overall_Satisfaction_03	4433 420	3186 445	035	1 391	164	068	031	030			

Median_Compensation_Satisfact	6824 569	2838 882	060	2 404	016	067	054	052
Total_Number_of_Employees_0	17 810	55 373	007	322	748	- 031	007	007
Percentage_ExportSales_0301	-59 402	118 297	- 011	- 502	616	- 034	- 011	- 011
Proportion_Employees_Using_C	-6658 909	6778 587	- 022	- 982	326	- 043	- 022	- 021
Percent_Workers_Having_Youn	-92 804	59 636	- 035	-1 556	120	- 044	- 035	- 033
Workplace_Average_Pay_0301	1 064	104	229	10 252	000	235	225	220
Average_Family_Other_Income	242	172	031	1 409	159	033	032	030
Average_Workforce_Tenure_03	387 593	332 805	027	1 165	244	028	026	025
Sum_HR_Practices_Compensati	-1635 512	1570 266	- 024	-1 042	298	- 042	- 023	- 022
Sum_HR_Practices_Organizatio	-1083 614	1077 291	- 023	-1 006	315	- 042	- 023	- 022
Average_Workplace_Promotion	-3554 456	1611 304	- 051	-2 206	028	- 027	- 050	- 047
Proportion_Fulltime_HighSkille	-814 639	6464 764	- 003	- 126	900	- 002	- 003	- 003
Proportion_Unionized_Workfor	7221 019	10957 482	015	659	510	013	015	014

9.7. Differential Analysis 2005-2003

The R square, ANOVA, and regression coefficients for the 2005-2003 data are shown in Table 9.7a, Table 9.7b, and Table 9.7c, respectively.

Tabl	Table 9.7a. Determinants of Productivity, 2005-2003 - Longitudinal Model Summary										
R	Adjusted Std Error R R Square Of the Estimate R Square Change F Change df1 df2 Sig F Change										
241	$\frac{1}{241} 058 047 560993 18981 058 5282 25 2147 000$										

Table 9.7b. Determinants of Productivity, 2005-2003 - Longitudinal ANOVA										
Sum of Squares df Mean Square F S1g										
Regression	4 156E+13	25	1 662E+12	5 282	000					
Residual	6 757E+14	2147	3 147E+11							
Total 7 173E+14 2172										

Table 9.7c. Determinar	Table 9.7c. Determinants of Productivity, 2005-2003 - Longitudinal Coefficients											
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correla	tions					
	B		D			Zero-						
Constant	<u>в</u> 5665 916	2138 484	Beta	2 650	008	order	Partial	Part				
Percent_Workers_Claiming_Too	58 685	67 809	020	865	387	- 021	019	018				
Percent_Workers_Claiming_Av	14 197	53 188	006	267	790	009	006	006				
Average_Expenditure_for_Train	-10 650	4 790	- 050	-2 223	026	- 056	- 048	- 047				
Proportion_Employees_Receivin	632 453	5398 938	003	117	907	- 007	003	002				
Proportion_Employees_Receivin	-1983 336	4763 481	- 010	- 416	677	- 003	- 009	- 009				
Sum_Courses_m_Classroom_Fo	513 427	965 054	014	532	595	005	011	011				
Sum_Courses_in_OntheJob_For	-271 657	965 435	- 007	- 281	778	- 017	- 006	- 006				
Average_Days_of_Sick_Paid_L	-318 528	666 076	- 010	- 478	633	017	- 010	- 010				
Average_Days_of_Other_Paid_	-69 993	189 334	- 008	- 370	712	022	- 008	- 008				
Average_Days_of_Unpaid_Leav	-705 161	365 837	- 042	-1 928	054	- 047	- 042	- 040				
Turnover_0503	-2951 576	10729 349	- 006	- 275	783	000	- 006	- 006				
Median_Overall_Satisfaction_05	1488 716	3474 731	010	428	668	011	009	009				
Median_Compensation_Satisfact	625 981	3353 093	005	187	852	003	004	004				
Total_Number_of_Employees_0	-142 140	88 598	- 034	-1 604	109	- 068	- 035	- 034				
Percentage_ExportSales_0503	52 360	168 302	007	311	756	003	007	007				
Proportion_Employees_Using_C	11326 008	10159 879	025	1 1 1 1 5	265	040	024	023				
Percent_Workers_Having_Youn	-64 170	73 123	- 019	- 878	380	- 009	- 019	- 018				
Workplace_Average_Pay_0503	1 416	143	218	9 896	000	215	209	207				
Average_Family_Other_Income	- 549	283	- 043	-1 944	052	- 011	- 042	- 041				
Average_Workforce_Tenure_05	-89 586	386 335	- 005	- 232	817	- 010	- 005	- 005				
Sum_HR_Practices_Compensati	-93 210	1946 990	- 001	- 048	962	- 015	- 001	- 001				
Sum_HR_Practices_Organizatio	-1727 044	1246 463	- 031	-1 386	166	- 024	- 030	- 029				
Average_Workplace_Promotion	-3317 879	1588 744	- 047	-2 088	037	- 034	- 045	- 044				
Proportion_Fulltime_HighSkille	-6889 766	8434 137	- 018	- 817	414	- 022	- 018	- 017				
Proportion_Unionized_Workfor	3245 154	12452 901	006	261	794	009	006	005				

9.8. Differential Analysis 2003-1999

The R square, ANOVA, and regression coefficients for the 2003-1999 data are shown in Table 9.8a, Table 9.8b, and Table 9.8c, respectively.

Tabl	Table 9.8a. Determinants of Productivity, 2003-1999 - Longitudinal Model Summary										
R	Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change										
221	049	036	1 26348E+06	049	3 829	25	1872	000			

Table 9.8b. Determinants of Productivity, 2003-1999 - Longitudinal ANOVA										
Sum of Squares df Mean Square F S1g										
Regression	1 528E+14	25	6 113E+12	3 829	000					
Residual	2 988E+15	1872	1 596E+12							
Total	3 141E+15	1897								

Table 9.8c. Determinants of Productivity, 2003-1999 - Longitudinal Coefficients											
	Unstandardized Coefficients		Standardized Coefficients	t	Sıg	Correla	itions				
	В	Std Error	Beta			Zero- order	Partial	Part			
Constant	-27183 945	6027 333		-4 510	000						
Percent_Workers_Claiming_Too	-32 311	172 932	- 004	- 187	852	007	- 004	- 004			
Percent_Workers_Claiming_Av	-81 005	140 774	- 014	- 575	565	011	- 013	- 013			
Average_Expenditure_for_Train	8 622	8 596	024	1 003	316	037	023	023			
Proportion_Employees_Receivin	-8135 430	11301 675	- 022	- 720	472	060	- 017	- 016			
Proportion_Employees_Receivin	17599 392	11418 195	046	1 541	123	041	036	035			
Sum_Courses_in_Classroom_Fo	6726 792	2123 443	092	3 168	002	059	073	071			
Sum_Courses_in_OntheJob_For	-6051 863	2082 572	- 084	-2 906	004	- 037	- 067	- 066			
Average_Days_of_Sick_Paid_L	4638 269	1444 583	074	3 211	001	077	074	072			
Average_Days_of_Other_Paid_	-144 379	648 860	- 005	- 223	824	003	- 005	- 005			
Average_Days_of_Unpaid_Leav	-727 676	755 526	- 022	- 963	336	- 027	- 022	- 022			
Turnover_0399	31478 672	19880 948	041	1 583	114	051	037	036			
Median_Overall_Satisfaction_03	3471 853	9051 795	010	384	701	031	009	009			

Median_Compensation_Satisfact	13449 858	8179 631	044	1 644	100	040	038	037
Total_Number_of_Employees_0	-16 237	115 559	- 003	- 141	888	- 025	- 003	- 003
Percentage_ExportSales_0399	498 804	306 328	039	1 628	104	026	038	037
Proportion_Employees_Using_C	47424 453	18753 279	060	2 529	012	067	058	057
Percent_Workers_Having_Youn	-49 368	183 533	- 006	- 269	788	002	- 006	- 006
Workplace_Average_Pay_0399	1 445	280	119	5 155	000	134	118	116
Average_Family_Other_Income	- 255	466	- 013	- 546	585	005	- 013	- 012
Average_Workforce_Tenure_03	1345 483	1063 470	031	1 265	206	045	029	029
Sum_HR_Practices_Compensati	-6414 046	4155 239	- 037	-1 544	123	- 054	- 036	- 035
Sum_HR_Practices_Organizatio	-682 255	2846 600	- 006	- 240	811	- 002	- 006	- 005
Average_Workplace_Promotion	7637 368	5038 745	036	1 516	130	056	035	034
Proportion_Fulltime_HighSkille	-29278 060	16882 489	- 040	-1 734	083	- 050	- 040	- 039
Proportion_Unionized_Workfor	-1845 714	24207 512	- 002	- 076	939	008	- 002	- 002

9.9. Differential Analysis 2005-2001

The R square, ANOVA, and regression coefficients for the 2005-2001 data are

shown in Table 9.9a, Table 9.9b, and Table 9.9c, respectively.

Tabl	Table 9.9a. Determinants of Productivity, 2005-2001 - Longitudinal Model Summary											
R	R R Square Adjusted Std Error R R Square Of the Estimate R Square Change F Change df1 df2 Sig F Change											
251	R R Square R Square <thr square<="" th=""> <thr square<="" th=""> <thr squ<="" td=""></thr></thr></thr>											

Table 9.9b. Deter	Table 9.9b. Determinants of Productivity, 2005-2001 - Longitudinal ANOVA									
	Sum of Squares	df	Mean Square	F	Sig					
Regression	9 392E+13	25	3 757E+12	4 993	000					
Residual	1 393E+15	1851	7 524E+11							
Total	1 487E+15	1876								

Table 9.9c. Determinants of Productivity, 2005-2001 - Longitudinal Coefficients											
	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correla	tions				
	P	Std Error	Data		0.5	Zero-	Dortical	Dout			
Constant	-1800 942	3760 591	Bela	- 479	632	order	Partial	Part			
Percent_Workers_Claiming_Too	-282 467	102 538	- 068	-2 755	006	- 065	- 064	- 062			
Percent_Workers_Claiming_Av	-90 896	101 967	- 022	- 891	373	- 009	- 021	- 020			
Average_Expenditure_for_Train	11 766	5 825	049	2 020	044	036	047	045			
Proportion_Employees_Receivin	-10449 366	8318 396	- 036	-1 256	209	- 021	- 029	- 028			
Proportion_Employees_Receivin	81 464	2434 886	001	033	973	- 006	001	001			
Sum_Courses_in_Classroom_Fo	-1961 822	1497 763	- 037	-1 310	190	- 064	- 030	- 029			
Sum_Courses_in_OntheJob_For	-845 347	1359 186	- 015	- 622	534	- 061	- 014	- 014			
Average_Days_of_Sick_Paid_L	1903 646	973 771	044	1 955	051	062	045	044			
Average_Days_of_Other_Paid_	-203 712	422 757	- 012	- 482	630	018	- 011	- 011			
Average_Days_of_Unpaid_Leav	-126 322	489 307	- 006	- 258	796	- 024	- 006	- 006			
Turnover_0501	8027 595	12110 950	016	663	508	020	015	015			
Median_Overall_Satisfaction_05	15229 295	6417 589	068	2 373	018	059	055	053			
Median_Compensation_Satisfact	-8806 266	5979 065	- 043	-1 473	141	001	- 034	- 033			
Total_Number_of_Employees_0	-26 677	88 859	- 007	- 300	764	- 039	- 007	- 007			
Percentage_ExportSales_0501	70 471	211 839	008	333	739	003	008	007			
Proportion_Employees_Using_C	7547 640	12955 868	014	583	560	- 006	014	013			
Percent_Workers_Having_Youn	-36 884	114 748	- 007	- 321	748	- 013	- 007	- 007			
Workplace_Average_Pay_0501	1 559	203	185	7 683	000	196	176	173			
Average_Family_Other_Income	- 460	459	- 024	-1 002	317	- 003	- 023	- 023			
Average_Workforce_Tenure_05	621 736	636 206	026	977	329	- 002	023	022			
Sum_HR_Practices_Compensati	-1265 596	2782 640	- 011	- 455	649	- 024	- 011	- 010			
Sum_HR_Practices_Organizatio	-3975 529	2108 888	- 045	-1 885	060	- 046	- 044	- 042			
Average_Workplace_Promotion	-6491 484	2769 792	- 056	-2 344	019	- 041	- 054	- 053			
Proportion_Fulltime_HighSkille	35831 143	12618 344	067	2 840	005	070	066	064			
Proportion_Unionized_Workfor	7164 988	15562 143	011	460	645	- 010	011	010			

9.10. Differential Analysis 2005-1999

The R square, ANOVA, and regression coefficients for the 2005-1999 data are

shown in Table 9.10a, Table 9.10b, and Table 9.10c, respectively.

Tabl	Table 9.10a. Determinants of Productivity, 2005-1999 - Longitudinal Model Summary											
R	Adjusted Std Error R R Square R Square of the Estimate R Square Change F Change df1 df2 Sig F Change											
242	059	046	1 49380E+06	059	4 481	25	1794	000				

Table 9.10b. De	Table 9.10b. Determinants of Productivity, 2005-1999 - Longitudinal ANOVA										
Sum of Squares df Mean Square F Sig											
Regression	2 500E+14	25	9 999E+12	4 481	000						
Residual	4 003E+15	1794	2 231E+12								
Total	4 253E+15	1819									

Table 9.10c. Determinants of Productivity, 2005-1999 - Longitudinal Coefficients										
	Unstandardızed Coefficients		Standardized Coefficients	t	Sıg	Correlations				
	В	Std Error	Beta			Zero- order Partial		Part		
Constant	-20006 512	7125 080	25 080		005					
Percent_Workers_Claiming_Too	-99 747	198 960	- 013	- 501	616	- 002	- 012	- 011		
Percent_Workers_Claiming_Av	222 963	172 991	032	1 289	198	032	030	030		
Average_Expenditure_for_Train	-21 177	11 187	- 048	-1 893	059	- 010	- 045	- 043		
Proportion_Employees_Receivin	2342 097	14605 856	005	160	873	027	004	004		
Proportion_Employees_Receivin	-7648 894	13902 015	- 019	- 550	582	033	- 013	- 013		
Sum_Courses_In_Classroom_Fo	7271 898	2396 903	086	3 034	002	070	071	069		
Sum_Courses_In_OntheJob_For	1592 492	2384 442	020	668	504	040	016	015		
Average_Days_of_Sick_Paid_L	3600 954	1775 960	048	2 028	043	063	048	046		
Average_Days_of_Other_Paid_	-128 593	832 394	- 004	- 154	877	- 002	- 004	- 004		
Average_Days_of_Unpaid_Leav	690 963	906 047	018	763	446	009	018	017		
Turnover_0599	25813 642	26153 526	027	987	324	028	023	023		
Median_Overall_Satisfaction_05	-4752 382	11417 778	- 012	- 416	677	- 029	- 010	- 010		

Median_Compensation_Satisfact	-5945 714	10008 013	- 017	- 594	553	- 013	- 014	- 014
Total_Number_of_Employees_0	-85 266	117 984	- 017	- 723	470	- 023	- 017	- 017
Percentage_ExportSales_0599	-1702 809	362 402	- 113	-4 699	000	- 096	- 110	- 108
Proportion_Employees_Using_C	-64736 144	22307 796	- 069	-2 902	004	- 045	- 068	- 066
Percent_Workers_Having_Youn	-276 592	207 372	- 032	-1 334	182	- 013	- 031	- 031
Workplace_Average_Pay_0599	1 869	288	152	6 497	000	149	152	149
Average_Family_Other_Income	1 249	692	043	1 805	071	037	043	041
Average_Workforce_Tenure_05	1457 429	1089 988	034	1 337	181	031	032	031
Sum_HR_Practices_Compensati	-11456 852	5277 042	- 052	-2 171	030	- 044	- 051	- 050
Sum_HR_Practices_Organizatio	475 031	3245 665	004	146	884	005	003	003
Average_Workplace_Promotion	-2617 326	5371 074	- 012	- 487	626	011	- 012	- 011
Proportion_Fulltime_HighSkille	-8549 361	19835 275	- 010	- 431	667	010	- 010	- 010
Proportion_Unionized_Workfor	67615 270	24080 322	068	2 808	005	064	066	064

9.11. Summary of Analyses

To summarize the cross-sectional results, we have reported in Table 9.11a the regression coefficients for the four survey years under study. The results of the longitudinal (differential) analyses are summarized in Table 9.11b. It is easy to see that, overall, the differential analysis generated results similar to those observed with the cross-sectional analysis.

The results of both the cross-sectional and longitudinal analyses did not provide consistent evidence in support the notion of a direct effect of training on productivity. In that sense, they were surprising because not expected from the findings reported in the literature. Also not consistent were the results related to the absenteeism, turnover and job satisfaction variables. This inconsistency is somewhat more surprising for the variables computed using the Workplace surveys than for those computed from the Employee surveys. Indeed, while the employee samples at the basis of the Employee survey changed every two years, the workplace sample remained relatively constant since changes were limited to replacing companies that had dropped out. Finally, we note that despite the relatively large number of variables used as predictors, the amount of variance in productivity explained by the model was small for all years.

To better illustrate the effects of the various variables, in the following sections we will distinguish among training variables (see Table 5.2), other variables of interest, which include variables on absenteeism, turnover and job satisfaction (see Table 5.3), and control variables (see Table 5.4).

9.11.1 Training and Productivity

In Chapter 4, we noted that studies in the literature suggest a positive relationship between training which positively affects productivity both at the individual and organizational levels. However, from the cross-sectional analyses reported in Table 9.11a, it is easy to see that none of the seven training variables we used in this study had a consistent effect on productivity across different years. One variable that showed some effect was <u>Percent Workers Claiming Availability Training Increased</u>, which measures the percentage of workers claiming that the amount of training available has increased. As noted in the previous chapters, higher levels of this variable imply higher levels of training if we assume that the perception of the workers regarding levels of training within the workplace is accurate. If so, higher levels of this variable should be associated with higher levels of productivity. In other words, we would expect a positive relation with productivity. Consistently with this rationale, a significant and positive effect was found for 1999 and 2001; however, the data show also a significant and negative effect for 2003. The only other case of a significant effect regarded the variable *Sum Courses in Classroom Format*. This variable measures the number of training courses provided in classroom format; therefore, we would expect a positive relation with productivity, i.e., more courses should result in more productivity. However, the effect was significant and positive, as expected, only for 1999 and 2003; no effect was found for 2001 and 2005. None of the other variables related to training seemed to have any impact on productivity.

The lack of results in the cross-sectional analyses could be explained if training had a delayed effect: that is, it might take time for training to produce an improvement in productivity. If so, we should have observed the expected effect in the longitudinal analyses. However, the results of the longitudinal analyses also provided little evidence of an effect of training on productivity.

The variable <u>Percent Workers Claiming Too Little Training for Job</u> and the variable <u>Percent Workers Claiming Availability Training Increased</u> exhibited an effect in the expected directions in only two analyses out of six. Expenditures on training, <u>Average Expenditure for Training</u>, had an effect in four out of six analyses, but in two cases the effect was inversely related to productivity contrary to expectations: i.e., increases in expenditures were associated with decreases in productivity. A similar outcome was also observed for <u>Sum Courses in Classroom Format</u>: there was a

significant effect in four analyses, but again, in one case (i.e., 2003-2001) the effect was opposite to what was expected.

In sum, both the cross-sectional and the longitudinal analyses provided no robust evidence of a direct effect of training on productivity. This was quite surprisingly considering the results reported by the literature.

9.11.2 Absenteeism and Productivity

The cross-sectional analyses showed virtually no effect of any variable measuring absenteeism (see Table 9.11a). Indeed, only the <u>Average Davs of Unpaid Leave</u> variable, which measures the average days of other unpaid leave (e.g. disability leave), had an effect; however, that was only for the 2003 data. The longitudinal analyses also provided inconsistent results (see Table 9.11b). Only measure of absenteeism showed some effect: <u>Average Davs of Sick Paid Leave</u>. This predictor exhibited an effect in five out of six analyses; however, in four of those cases the direction of the effect was positive suggesting that increases in paid sick leaves improve productivity!

9.11.3 Turnover and Productivity

There was no effect of turnover in neither the cross-sectional nor the longitudinal analyses.

9.11.4 Job Satisfaction and Productivity

Higher levels of job satisfaction should be associated with higher levels of productivity. However, the results of the analyses failed to provide convincing evidenced

of this relation. In the cross-sectional analyses, overall satisfaction with all aspects of the job, *Median Overall Satisfaction*, had a positive and significant effect only in 2001 and 2003. Satisfaction for pay and benefits, *Median Compensation Satisfaction*, had a positive significant effect only in 2001. Similar results were observed for the longitudinal analyses. Overall satisfaction with all aspects of the job had an effect only in 2001-1999 and 2005-2001. However, the direction of the effect was opposite in the two comparisons. Satisfaction for pay and benefits had a significant effect for the 2003-2001 case only.

9.11.5 Control Variables and Productivity

The cross-sectional analyses showed that among the control variables, only two predictors appeared to have some effect on productivity. The first variable was average pay, *Workplace Average Pay*, which had the expected positive effect on productivity in all four survey years, confirming that higher level of pay are associated with higher levels of productivity. The other variable was the proportion of employees using computers, *Proportion Employees Using Computers*. Considering today's business environment, we can expect a higher use of technology to be associated with higher levels of productivity. A significant effect consistent with this expectation was observed for the 1999, 2001 and 2003 data.

Some variables showed some moderate effect. The data show that older organizations tend to be more productive; indeed there was a significant and positive effect of the age of organization, *Organization Age*, in 2003 and 2005. The same result was observed for the organization skill level

<u>Proportion Fulltime_HighSkilled Workers</u>, which was also significant for the years 1999 and 2003. However, the direction of the effect was contrary to what might reasonably expected since in both cases the coefficients were negative. All of the other control variables exhibited either a limited effect (i.e., they showed a significant effect in only one case) or no effect at all.

The results of the longitudinal analyses confirmed the consistent and robust effect on productivity of average pay (*Workplace Average Pay*): significant and positive effects were observed in all six analyses. The average number of promotions, *Average Workplace Promotions*, resulted significant in three analyses. However, the results were somewhat puzzling since the direction of the effect was negative.

Among the other control variables, a few such as level of unionization, export sales, and proportion of employees using computers seemed to have some effect albeit in a very limited fashion. Consistently with other research in literature, increases in level of unionization (*Proportion Unionized Workforce*) appear to be related to increases in productivity for the 2001-1999 and 2005-1999 differential analyses. The proportion of employees using computers, *Proportion Employees Using Computers* also had an effect on productivity in two analyses, but the effects were in opposite direction. The effects of the level of openness to export (*Percentage ExportSales*) were significant, but with a negative coefficient, in 2001-1999 and 2005-1999. Also contrary to expectations were the results relative to the number of HR practices related to compensation (*Sum HR Practices Compensation*) which also had an effect on productivity in the same years. All other variables had either limited effect, i.e., one comparison years only, or no effect at all.

Coefficients		······	· • • • • •			.		
	-	1999		2001		2003		2005
	Coefficient	Sıg	Coefficient	Sıg	Coefficient	Sıg	Coefficient	Sıg
	В		В		В		В	
Percent_Workers_Claiming_Too_Little_Training_for_Job	252 21	0 124	-241 993	0 102	-205 909	0 102	48 431	0 725
Percent_Workers_Claiming_Availability_Tra ining_Increased	312 576	0.042	276 554	0.028	-387 981	0.000	-152 303	0 221
Average_Expenditure_for_Training	7 504	0 401	-0 002	1 000	0 247	0 972	7 131	0 361
Proportion_Employees_Receiving_Classroo m_Training	5851 304	0 686	10914 05	0 295	-13387 2	0 089	-9808 43	0 302
Proportion_Employees_Receiving_OntheJob _Training	-1743 65	0 902	82 024	0 979	1081 773	0 883	1668 715	0 854
Sum_Courses_in_Classroom_Format	6227 968	0.005	-1363 59	0 470	5134 448	0.001	-845 055	0 646
Sum_Courses_in_OntheJob_Format	-3590 12	0 1 1 9	-206 214	0 911	-1603 94	0 338	2177 354	0 246
Average Days of Sick Paid Leave	317 882	0 831	2141 229	0 120	-1187 49	0 184	2484 619	0115
Average Days_of_Other_Paid_Leave	-1025 03	0 583	-238 605	0 745	-468 912	0 235	-663 959	0 305
Average_Days_of_Unpaid_Leave	-710 355	0 285	-528 179	0 445	-1794 69	0.013	-824 241	0 14
Turnover	-2697 63	0 880	2554 727	0 843	8025 003	0 574	-4997 74	0 731
Median_Overall_Satisfaction	14310 41	0 1 7 0	18149 69	0.043	30229 26	0.000	2719 376	0 743
Median_Compensation_Satisfaction	3363 361	0 712	-23286 8	0.005	10231 69	0 142	-13119 7	0 099
Organization_Age	422 861	0 1 7 4	83 866	0 660	467 34	0.001	426 025	0.007
Total_Number_of_Employees	53 635	0 324	28 138	0 490	-9 757	0 752	17 73	0 632
Percentage_ExportSales	-172 76	0 3 8 0	-72 429	0 655	-225 942	0 1 1 2	-276 044	0 082
Proportion_Employees_Using_Computers	58213 55	0.000	27576 39	0.010	23450 19	0.011	6311 265	0 564
Average_Age_Workforce	1188 185	0 069	-206 105	0 725	-1460 39	0.003	408 842	0 444
Percent_Workers_Having_Young_Kids	264 095	0 135	11 063	0 942	214 841	0 106	-107 049	0 522
Workplace_Average_Pay	1 918	0.000	1 987	0.000	2 1 1 7	0.000	1 867	0.000
Average_Family_Other_Income	0 74	0 239	-1 174	0 100	0 008	0 984	-0 598	0 275
Average_Workforce_Tenure	-1253 14	0 238	-385 85	0 670	594 226	0 407	-378 027	0 633
Sum_HR_Practices_Compensation	4345 639	0 283	2662 462	0 434	-6229 01	0.029	-2917 44	0 398
Sum_HR_Practices_Organization_of_Work	-8479 82	0.003	-1295 76	0 625	4082 386	0 063	1856 416	0 424
Average_Workplace_Promotions	-4936 95	0 386	9164 919	0.047	5962 866	0.080	4610 591	0 152
Proportion_Fulltime_HighSkilled_Workers	-95253 5	0.000	-4894 85	0 684	-29295 9	0.004	-9648 49	0 408
Proportion Unionized Workforce	-22046	0 14	-3386.8	0 771	-18979 3	0 081	-13424 6	0 313

Table 9.11a - Determinants of Productivity–Summary Cross-Sectional Regression Coefficients

In summary, the longitudinal analyses produced results similar to those observed for the cross-sectional ones. In particular, the only relevant variable appears to be average pay. All other variables were either not relevant or still exhibited a high degree of inconsistency. For some of the variables the lack of relevance was surprising. In particular, among the training variables there is the proportion of employees who received classroom training. This is a rather basic measure of amount of training; as such, one might expect it to be the first to show some form of relation with productivity. Also interesting was the fact that none of the measures of informal training had an effect.

Therefore the results of both cross-sectional and longitudinal analyses do not support the notion of a direct effect of training on productivity as often reported. The absence of any effect on productivity of the other variables of interests: turnover, absenteeism and job satisfaction, also indicate the absence of the indirect effect postulated in Chapter 1.

Table 9.11b - Determinants of Productivity – Summary Longitudinal (Differential) Regression Coefficients												
		2001- 1999		2003- 2001		2005- 2003		2003- 1999		2005- 2001		2005- 1999
	Coefficient	Sıg	Coefficient	Sıg	Coefficient	Sıg	Coefficient	Sig	Coefficient	Sig	Coefficient	Sıg
	В		В		В		В		В		В	
Percent_Workers_Claiming_Too_Little_Training_for_Job	-224 239	0 105	-93 306	0.078	58 685	0 387	-32 311	0 852	-282 467	0.006	-99 747	0 616
Percent_Workers_Claiming_Availability_Training_Increased	298 526	0.022	84 276	0.055	14 197	0 790	-81 005	0 565	-90 896	0 373	222 963	0 198
Average_Expenditure_for_Training	-8 731	0 244	9 3 3 1	0.003	-10 65	0.026	8 622	0 316	11 766	0.044	-21 177	0.059
Proportion Employees_Receiving_Classroom_Training	5445 235	0 571	1346 446	0 744	632 453	0 907	-8135 43	0 472	-10449 4	0 209	2342 097	0 873
Proportion_Employees_Receiving_OntheJob_Training	615 225	0 860	306 563	0 801	-1983 34	0 677	17599 39	0 123	81 464	0 973	-7648 89	0 582
Sum_Courses_in_Classroom_Format	8488 981	0.000	-2117 11	0.004	513 427	0 595	6726 792	0.002	-1961 82	0 19	7271 898	0.002
Sum_Courses_in_OntheJob_Format	-1915 78	0 256	-533 549	0 463	-271 657	0 778	-6051 86	0.004	-845 347	0 534	1592 492	0 504
Average_Days_of_Sick_Paid_Leave	3558 618	0.002	-754 818	0.038	-318 528	0 633	4638 269	0.001	1903 646	0.051	3600 954	0.043
Average_Days_of_Other_Paid_Leave	161 984	0 847	14 335	0 943	-69 993	0 712	-144 379	0 824	-203 712	0 63	-128 593	0 877
Average_Days_of_Unpaid_Leave	-656 799	0 237	-73 696	0 763	-705 161	0.054	-727 676	0 336	-126 322	0 796	690 963	0 446
Turnover	-115193	0 528	6744 827	0 258	-2951 58	0 783	31478 67	0 1 1 4	8027 595	0 508	25813 64	0 324
Median_Overall_Satisfaction	-27490 4	0.001	4433 42	0 164	1488 716	0 668	3471 853	0 701	15229 3	0.018	-4752 38	0 677
Median_Compensation_Satisfaction	-6175 58	0 429	6824 569	0.016	625 981	0 852	13449 86	0 100	-8806 27	0 141	-5945 71	0 553
Total_Number_of_Employees	58 61	0 624	17 81	0 748	-142 14	0 109	-16 237	0 888	-26 677	0 764	-85 266	0 47
Percentage_ExportSales	-728 75	0.004	-59 402	0 616	52 36	0 756	498 804	0 104	70 471	0 739	-1702 81	0.000
Proportion_Employees_Using_Computers	-23965 7	0 1 5 4	-6658 91	0 326	11326 01	0 265	47424 45	0.012	7547 64	0 56	-64736 1	0.004
Percent_Workers_Having_Young_Kids	-31 445	0 840	-92 804	0 120	-64 17	0 380	-49 368	0 788	-36 884	0 748	-276 592	0 182
Workplace_Average_Pay	2 1 5 6	0.000	1 064	0.000	1 416	0.000	1 445	0.000	1 559	0.000	1 869	0.000
Average_Family_Other_Income	1 496	0.011	0 242	0 1 5 9	-0 549	0 052	-0 255	0 585	-0 46	0 317	1 249	0 071
Average_Workforce_Tenure	434 789	0 648	387 593	0 244	-89 586	0 817	1345 483	0 206	621 736	0 329	1457 429	0 181
Sum_HR_Practices_Compensation	-19371 5	0.000	-1635 51	0 298	-93 21	0 962	-6414 05	0 123	-1265 6	0 649	-11456 9	0.030
Sum_HR_Practices_Organization_of_Work	-1902 38	0 478	-1083 61	0 315	-1727 04	0 166	-682 255	0 811	-3975 53	0.060	475 031	0 884
Average_Workplace_Promotions	6878 877	0 1 7 0	-3554 46	0.028	-3317 88	0.037	7637 368	0 13	-6491 48	0.019	-2617 33	0 626
Proportion_Fulltime_HighSkilled_Workers	-17754 9	0 299	-814 639	0 900	-6889 77	0 414	-29278 1	0 083	35831 14	0.005	-8549 36	0 667
Proportion_Unionized_Workforce	49003 88	0.005	7221 019	0 51	3245 154	0 794	-1845 71	0 939	7164 988	0 645	67615 27	0.005

10 Chapter: Discussion

The acquisition of new skills is generally a costly endeavor. The Human Capital Theory considers the costs associated with the acquisition of new skills, which might be obtained through formal education or training programs, as an investment. For the individual, this investment has the scope of improving his/her wage; for the organization, the investment is aimed at increasing productivity (Becker, 1962, 1977; Mincer, 1962, 1974, 1981, 1988). In this work, we focused only the HCT account of training from the perspective of the organization. The notion that training directly improves productivity through an increase of workers' skills has been object of much research (Becker, 1975; Bartel, 1987, 1994, 2000; Bishop, 1991; Nollen & Gaertner, 1991; Black & Lynch, 1996 Krueger & Rouse, 1998; Leckie et al., 2001). Overall, this research has attempted to verify and possibly measure this direct relationship. In this work, we considered an additional mode in which training might affect productivity: that is, by creating organizational conditions that foster higher levels of productivity. Specifically, in addition to the direct effect generally reported in the literature whereby training improves productivity through an increase of skills, we also hypothesized a secondary, indirect effect via factors such absenteeism, turnover, and job satisfaction. That is, we hypothesized that training affects absenteeism, turnover, and job satisfaction and these in turn affect productivity. The objective of this work was to investigate the existence of this indirect effect using both cross-sectional and longitudinal analyses of data from the WES surveys. To this purpose, we planned a two-step approach using both cross-sectional and 199

longitudinal analyses. The first step was aimed at investigating, using a regression approach, the effect of training on absenteeism, turnover, and job satisfaction; the second step was aimed at investigating the effect of training and the other three factors on productivity. It was reasoned that if training had an indirect effect, we would have observed in step one an effect of training on one, or more, of the three variables and then in step two we would have observed an effect of these variables on productivity. In addition, we also expected to observe in step two a direct effect of training on productivity.

The relationships between training and the other three variables (i.e., step one) were examined in Chapters 6, 7, and 8. The results were very interesting and in line, at least partially, with the notion of an indirect effect of training on productivity. To better interpret the results, we considered only the overall pattern of results, i.e., effects that were consistent over different survey years.

We found a robust relationship between training and turnover (Chapter 6). This was particularly true for the objective measures of training, such as the amount of training expenditure and proportion of employees who received classroom or on-the job-training. However, the lack of information regarding the nature of the training with respect to the distinction between general and specific training made it difficult to evaluate the consistency of the results with the HC theory. The latter postulates that the relation between training and turnover depends upon the type of training (Becker, 1962; Bishop, 1991). General training, which can be transferred across organizations, should result in an increase of turnover, whereas specific training, which cannot be transferred across organizations, should result in a decrease of turnover. The data in Chapter 6

suggest, in most cases, a positive relation between training and turnover. This is true for measures of training which is nominally of general nature, e.g., 'classroom' training. In this case, the results are consistent with the HC theory (Becker, 1962, 1977; Mincer, 1962, 1974, 1981, 1988). However, the positive relation was observed also for measures of training which is nominally of specific nature, e.g., 'on-the-job' training. In this case, the results are not consistent. However, it should be noted that the subjects/topics included in the WES questions that measured 'on-the-job' training are the same as those in the "classroom" training questions; and in both cases the training is of rather general nature, e.g., literacy. This implies that the WES questions are actually distinguishing the mode of delivery, "classroom" vs. 'on-the-job', as opposed to the content. Accordingly, the 'on-the-job' training measured by the WES is likely not specific in the sense considered by the HC theory (i.e., 'specific' is only training that cannot be transferred across organizations). In sum, even the results of the 'on-the-job' training are likely to be consistent with the HC theory.

We found a more limited effect of training on absenteeism (Chapter 7), as measured by the number of paid and unpaid leaves. The HC theory does not address the relation between training and absenteeism. Nonetheless, we would expect an inverse relationship between training and absenteeism. We have seen, however, that the findings reported in the literature were rather mixed, suggesting a more complex relation (Kruegher & Rouse, 1998; Dionne & Dostie, 2005; Böckerman, Johansson and Kauhanen, 2009). Our results confirmed such complexity. We did find some evidence in favor of a relationship between training and absenteeism. But the effect appeared complex since some measures of training suggested a relationship in the expected direction whereas others did not.

The results regarding job satisfaction (Chapter 8) were more interesting. Again this is a relation that has not been addressed in the context of the HC theory. We hypothesized that training should increase job satisfaction because it creates an environment favorable to the workers. The results confirmed this expectation. We found a strong and consistent effect of training on job satisfaction. This relation, however, was observed for the subjective measures (i.e., as perceived by the workers) of training but not for the objective measure of training (e.g., expenditures for training). This suggests that the level of job satisfaction depends mostly upon the perceived level of training, rather than on the actual level of training.

The relationships between productivity and the four variable of interest: training, absenteeism, turnover, and job satisfaction, (i.e., step two) were examined in Chapters 9. Again, to better interpret the results, we considered only the overall pattern of results, i.e., effects that were consistent over different survey years.

The results failed to indicate any consistent effect of absenteeism, turnover, and job satisfaction on productivity; hence, the results did not confirm the hypothesized secondary, indirect, effect of training on productivity. More importantly, the results also failed to confirm the direct effect of training on productivity: none of the training variables had a consistent effect on productivity. Indeed, some significant effects were occasionally observed, but these effects were not observed for all survey years. These results were the most surprising for they were not consistent with the Human Capital theory and the literature. The only robust and consistent effect on productivity was that of average pay. The data confirmed this relation in all survey years for both cross-sectional and longitudinal analyses.

The reasons underlining the absence of the training effect on productivity are unclear. These results might be due to both characteristics of the Canadian population and of the organizations. Canadians already have a very high level of education; accordingly, additional level of training might have marginal, if any, effect on productivity. This might not be true for very specific type of training, but is likely for general training. It is interesting to note that the measure of training in the WES even when defined as specific (e.g., on the job) involve knowledge in skills which serve well in all modern organizations.

Another possible reason for the lack of an effect is that the analyses performed in this study considered only linear relationships. Thus, it is possible that a relation between training and productivity exists, but this relation is a nonlinear one. It should be noted that some authors have investigated the effect of training using a nonlinear analysis based upon the Cobb-Douglas approach, which describes the relation between capital, labour and productivity. Unfortunately, this approach could be used in this work because the WES does not provide information on capital. Considering the wealth of information provided by the WES, the lack of indicators about invested capital is somewhat disappointing. Finally, we should note that we considered organizations from all economic sectors and sizes (but higher than 10 employees). Perhaps the effect of training is limited to, or more pronounced for, organizations of a given size or belonging to a specific economic sector. The WES provides some information to categorize the sampled organizations according to their economic sector and organizational size. Therefore, we performed multiple analyses, similar to those reported in Chapter 9, for the different economic sectors and organization sizes. The results of these analyses are summarized in Appendix 1. These results were not discussed in the main manuscript because the results were substantially similar to those for the overall data sets reported in Chapter 9.

The effect of training on productivity might also be delayed in time. Therefore in future research, it would be useful to devote some attention to lagged predictors as it is likely that some of the relevant relations occur in a gradual or lagged manner.

Although this study did not confirm the positive effect of training on productivity. either directly or indirectly, it did provide new and interesting insights on the benefits of training. Indeed, we found interesting results pertaining to the effect of training on the indirect variables, particularly with regards to job satisfaction. As the reader will recall we considered two types of satisfaction, one related to overall job satisfaction and the other with economic facets of his/her job (i.e., compensation related). The results show a positive relation between training and both types of job satisfaction in the cross-sectional and longitudinal analysis. Perhaps even more interesting is that this consistent result is present only when we consider perceived level of training as opposed to the actual level of training (e.g., expenditure or number of courses offered). Specifically, the relation is present only for the Percent Workers Claiming Availability Training Increased, which measures the percentage of employees claiming that the availability of training has increased. Percent Workers Claiming Too Little Training for Job, which and measures the percentage of employees claiming that the amount of training is too little for the demands of the job.

These findings are interesting for two reasons. First they suggest that to assess the relevance of training, we need to consider also how the workers perceive the training itself. For example, an organization may spend a lot of resources on training, but the workers might find it insufficient, not related to work. As a result they might resist and not embrace the effort of the organization. The second reason is that the findings also suggest that training can act as a motivational tool for improving the psychological well being of the workers.

The results obtained with job satisfaction may signal that there are other issues which possibly affect productivity. Some authors have speculated that boredom, lack of stimulation and therefore motivation to work affected the performance/productivity relation (Kaufman, 1970; Medoff & Abraham, 1980). Therefore, these results suggest the opportunity to further investigate the role of job satisfaction within the workplace.

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Appendix I

The WES categorizes the sampled organizations according to their organizational size (4 categories) and economic sector (14 categories). To verify whether the effect of training is limited to, or more pronounced for, organizations of a given size or belonging to a specific economic sector, we performed multiple analyses, similar to those reported in Chapter 9, for the different economic sectors and organization sizes. The summarized results of these analyses are reported below.

A. ORGANIZATION SIZE - Summary Cross-Sectional Regressions Coefficients



Table A1 1- Determinants of Productivity - Summary Cross-Section								
Organization Size >10-19								
		1999		2001		2003		2005
	N=	425	N=	347	N=	376	N=	434
	Coefficient		Coefficient		Coefficient		Coefficient	
	В	Sıg	В	Sıg	В	Sig	В	Sig
Percent Workers Claiming Too Little Training for Job	449 422	244	49 674	737	-228 026	332	182 698	273
Percent_Workers_Claiming_Availability_Training_Increased	512 330	161	190 443	108	-875 448	.000	138 245	355
Average_Expenditure_for_Training	- 198	995	11 157	130	15 092	444	4 565	693
Proportion_Employees_Receiving_Classroom_Training	42556 929	348	14180 226	221	-15061 639	490	-25881 929	147
Proportion Employees Receiving Onthe Job Training	-59323 646	115	-2550 457	793	-1658 868	933	-689 584	969
Sum_Courses_in_Classroom_Format	-837 002	905	-1348 652	619	6774 585	118	-21 063	995
Sum_Courses_in_OntheJob_Format	-2921 069	639	-693 493	786	2024 441	596	2220 781	514
Average_Days_of_Sick_Paid_Leave	-26033 992	.000	5014 694	.016	3690 545	308	7322 170	.006
Average_Days_of_Other_Paid_Leave	14142 450	126	114 816	910	-1391 054	073	-144 026	929
Average_Days_of_Unpaid_Leave	-1882 768	289	-1289 027	215	-3157 455	025	-754 223	247
Turnover	13139 294	775	43029 576	.002	8091 872	816	-7502 127	712
Median_Overall_Satisfaction	17432 560	488	36562 420	.000	2122 335	905	-10743 964	309
Median_Compensation_Satisfaction	-22740 860	306	-35769 621	.000	60087 559	.000	-6790 564	510
Organization_Age	22 143	978	719 319	.000	221 485	521	96 848	686
Total_Number_of_Employees	1544 994	745	-1424 084	388	-2859 734	260	-2167 670	204
Percentage_ExportSales	-347 015	536	13 573	955	57 463	886	-36 573	881
Proportion_Employees_Using_Computers	82244 022	.015	2246 875	850	53512 205	.009	-3342 693	828
Average_Age_Workforce	2521 926	098	369 455	497	-1303 904	231	1765 326	.010
Percent_Workers_Having_Young_Kids	443 456	236	73 177	609	-137 913	579	127 961	528
Workplace_Average_Pay	1 611	.009	1 415	.000	2 493	.000	1 346	.000
Average_Family_Other_Income	988	512	-1 505	060	- 034	956	- 469	501
Average_Workforce_Tenure	-897 880	717	-1828 967	.054	-3148 082	.030	-793 888	427
Sum_HR_Practices_Compensation	6058 152	533	6791 596	072	-5493 480	368	-3287 409	491
Sum_HR_Practices_Organization_of_Work	103 773	989	-4614 867	136	-504 672	923	3765 824	249
Average_Workplace_Promotions	-2530 815	859	14296 685	.011	9822 570	168	-141 273	972
Proportion_Fulltime_HighSkilled_Workers	-113095 411	.002	-2961 220	814	-42530 986	.052	-36750 314	.015
Proportion_Unionized_Workforce	-6534 565	889	14755 590	387	-32030 948	288	30344 773	309

Table A1 2 - Determinants of Productivity - Summary Cross-Sectional Regressions Coefficients									
Organization Size 20-99									
		1999		2001	1	2003		2005	
	N=	1270	N=	1241	N=	1297	N=	1524	
	Coefficient		Coefficient		Coefficient		Coefficient		
	В	Sig	В	Sig	В	Sig	В	Sig	
Percent_Workers_Claiming_Too_Little_Training_for_Job	11 246	964	-224 993	411	-46 908	623	26 927	907	
Percent_Workers_Claiming_Availability_Training_Increased	172 665	477	254 200	307	-31 522	690	-309 345	123	
Average_Expenditure_for_Training	15 595	144	5 7 5 7	589	7 353	087	5 527	662	
Proportion Employees_Receiving_Classroom_Training	-8886 728	647	22926 029	276	-1475 429	787	-2759 593	830	
Proportion_Employees_Receiving_OntheJob_Training	21314 109	288	27854 101	161	-518 159	918	-5346 720	663	
Sum_Courses_in_Classroom_Format	7422 628	.017	-2729 746	398	-365 256	744	-2373 999	337	
Sum_Courses_in_OntheJob_Format	-2802 782	394	1347 587	689	521 017	653	6080 336	.019	
Average Days of Sick Paid Leave	13318 948	.000	2161 999	358	-939 070	.045	567 084	801	
Average_Days_of_Other_Paid_Leave	-7385 721	.004	801 488	500	329 922	252	-613 744	433	
Average_Days_of_Unpaid_Leave	-1400 690	111	-947 591	340	-309 091	595	-1543 013	137	
Turnover	-7849 239	751	-34995 853	124	-16632 447	075	4497 845	838	
Median_Overall_Satisfaction	1776 153	910	38383 544	.015	6799 127	201	5370 390	660	
Median_Compensation_Satisfaction	18553 792	184	-25059 084	108	2692 113	557	-15985 359	192	
Organization_Age	535 911	254	-439 842	194	26 146	773	402 083	080	
Total_Number_of_Employees	492 851	141	-398 956	165	228 630	.029	-147 726	573	
Percentage_ExportSales	275 866	329	-144 301	592	-127 222	165	-451 919	.047	
Proportion_Employees_Using_Computers	40514 272	.022	10278 395	584	8727 233	144	8570 922	584	
Average_Age_Workforce	-122 629	904	-914 459	431	-424 764	205	-792 658	329	
Percent_Workers_Having_Young_Kids	549 036	087	255 855	388	81 700	431	-263 178	309	
Workplace_Average_Pay	1 818	.000	1 871	.000	1 205	.000	1 940	.000	
Average_Family_Other_Income	449	613	- 377	771	829	.035	034	967	
Average_Workforce_Tenure	1377 117	437	2910 652	080	464 227	387	1109 821	366	
Sum_HR_Practices_Compensation	2 036	1 000	-1345 656	817	2753 354	186	-2802 339	583	
Sum_HR_Practices_Organization_of_Work	-13461 975	.001	2409 445	578	1144 968	413	828 253	802	
Average Workplace Promotions	-10568 468	231	-8969 703	243	486 828	836	8805 637	078	
Proportion_Fulltime_HighSkilled_Workers	-86433 606	.000	-34217 053	100	-30289 474	.000	15540 156	394	
Proportion_Unionized_Workforce	-42714 202	.034	-55696 073	005	-1410 254	842	-10489 544	547	

Table A1 3 - Determinants of Productivity - Summary Cross-Section	onal Regressions	Coeffici	ents					
Organization Size 100-499								
		1999		2001		2003		2005
	N=	889	N=	905	N=	918	N=	979
	Coefficient		Coefficient		Coefficient		Coefficient	
	В	Sig	В	Sıg	В	Sig	B	Sig
Percent_Workers_Claiming_Too_Little_Training_for_Job	-103 623	846	-1060 851	.052	-323 821	559	-92 254	796
Percent Workers Claiming Availability Training Increased	224 088	648	-1000 587	.044	-334 166	508	-487 019	131
Average Expenditure for Training	26 169	185	-56 084	.003	-3 182	886	22 660	.060
Proportion_Employees_Receiving_Classroom_Training	-37539 740	278	30345 977	285	-51558 617	189	4172 595	869
Proportion_Employees_Receiving_OntheJob_Training	13544 239	711	-945 661	753	89477 597	.013	20534 152	355
Sum_Courses_in_Classroom_Format	5830 560	203	9813 895	060	-1662 846	779	-3876 415	269
Sum_Courses_in_OntheJob_Format	-3006 676	521	-11105 888	.041	-8431 816	154	-471 450	892
Average_Days_of_Sick_Paid_Leave	532 141	717	946 338	696	-6320 502	125	3478 479	120
Average_Days_of_Other_Paid_Leave	7 834	997	372 892	850	-1394 479	630	-754 712	568
Average_Days_of_Unpaid_Leave	-1044 578	606	-666 704	764	288 750	909	-813 315	518
Turnover	-16008 415	815	11853 935	794	-25216 581	677	-40181 189	290
Median_Overall_Satisfaction	-8788 597	777	14642 340	620	31498 668	371	30335 516	150
Median_Compensation_Satisfaction	1938 099	942	7049 840	828	13137 455	683	16734 501	417
Organization_Age	-378 211	555	-1007 445	106	809 251	090	624 146	.019
Total_Number_of_Employees	220 425	081	-77 457	561	5 886	969	36 215	688
Percentage_ExportSales	-937 727	.007	-308 631	379	-651 576	129	211 353	419
Proportion_Employees_Using_Computers	72803 606	.060	55245 675	151	-21934 240	626	-9995 948	703
Average_Age_Workforce	-1385 392	609	-641 912	782	-1720 335	468	-1401 166	277
Percent_Workers_Having_Young_Kids	-158 292	800	-653 309	316	77 460	907	-530 296	209
Workplace_Average_Pay	3 028	.000	4 920	.000	5 383	.000	2 414	.000
Average_Family_Other_Income	110	968	- 906	593	4 099	181	- 578	711
Average_Workforce_Tenure	504 713	872	3128 018	325	-1919 413	536	-2364 579	205
Sum_HR_Practices_Compensation	31821 366	.003	11642 089	284	-5807 221	631	302 974	966
Sum_HR_Practices_Organization_of_Work	-14995 008	.052	-7695 403	317	9545 921	266	-67 799	989
Average Workplace Promotions	48548 970	.002	23127 702	091	15474 515	323	3839 250	682
Proportion_Fulltime_HighSkilled_Workers	-123556 303	.007	-36661 778	417	-58952 621	262	-8290 257	787
Proportion_Unionized_Workforce	-14269 014	670	-56481 116	112	-17369 540	662	-14994 615	528

Table A1 4 - Determinants of Productivity - Summary Cross-Sectional Regressions Coefficients								
Organization Size 500 and greater								
		1999		2001		2003		2005
	N=	207	N=	215	N=	194	N=	210
	Coefficient		Coefficient		Coefficient		Coefficient	
	В	Sig	В	Sıg	В	Sıg	В	Sig
Percent Workers Claiming Too Little Training for Job 99	-2009 082	312	-234 382	606	-663 126	071	-1270 660	036
Percent_Workers_Claiming_Availability_Training_Increased_99	-4668 397	.023	191 882	590	-275 924	368	198 598	739
Average Expenditure_for_Training_99	22 677	663	23 817	.040	-22 723	.024	-19 661	188
Proportion_Employees_Receiving_Classroom_Training_99	-100416 775	493	-51346 563	.012	3560 239	839	9200 049	815
Proportion_Employees_Receiving_OntheJob_Training_99	337023 166	.018	4469 514	820	4023 106	722	41461 518	287
Sum_Courses_in_Classroom_Format_99	5074 282	786	2125 865	539	2991 097	209	5480 073	316
Sum_Courses_in_OntheJob_Format_99	-7655 081	647	2822 621	381	-2307 785	293	-125 210	980
Average Days of Sick Paid Leave 99	-9756 593	398	1359 706	531	1429 125	450	1509 144	700
Average Days_of_Other_Paid_Leave_99	-17211 093	216	193 730	913	-1068 926	284	-1477 513	596
Average_Days_of_Unpaid_Leave_99	215 949	980	-1076 430	475	1346 268	631	736 889	824
Turnover_99	24257 098	906	47403 994	352	-36420 520	392	-70572 072	290
Median_Overall_Satisfaction_99	57628 846	580	-4902 770	828	21104 390	249	82569 687	017
Median Compensation Satisfaction 99	100826 135	332	-782 332	971	-21118 288	288	-26896 849	430
Organization_Age_99	-129 718	937	885 003	.013	-62 853	750	-414 065	352
Total_Number_of_Employees_99	-58 022	560	18 627	404	2 565	792	-4 368	831
Percentage_ExportSales_99	-1977 209	093	-480 585	.048	-90 818	627	-308 475	437
Proportion_Employees_Using_Computers_99	65885 186	712	64203 494	.022	17218 016	382	17006 780	684
Average_Age_Workforce_99	29780 048	.015	310 406	881	-1782 151	228	-1349 573	651
Percent_Workers_Having_Young_Kids_99	3881 190	152	-230 807	640	-624 519	118	1543 350	064
Workplace_Average_Pay_99	1 808	439	1 257	.005	1 595	.000	2 281	000
Average_Family_Other_Income_99	8 1 4 1	573	-6 145	.018	1 131	608	028	994
Average_Workforce_Tenure_99	9781 299	368	-690 556	767	2451 185	077	-2110 079	533
Sum_HR_Practices_Compensation_99	27206 676	514	6636 023	408	-2960 175	607	-79 800	995
Sum_HR_Practices_Organization_of_Work_99	-35161 542	272	3702 201	470	-1075 378	759	-2262 476	787
Average_Workplace_Promotions_99	24310 229	557	-5770 216	514	3591 653	580	16003 781	256
Proportion_Fulltime_HighSkilled_Workers_99	-118255 132	538	-65436 624	.052	-553 530	983	-25345 615	619
Proportion_Unionized_Workforce_99	-105516 559	427	16846 143	535	-24862 973	257	-17756 498	678





Table B1 1- Determinants of Productivity - Summary Lon	ngıtudınal (Dıff	erential) I	Regressions Coe	efficients								
Organization Size >10-19												
		2001		2003		2005		2003		2005		2005
		1999		2001	N	2003	N	1999		2001	D.	1999
	N=	226	N=	225	N=	250	N=	199	N=	202	N=	194
	Coeff		Coeff		Coeff		Coeff		Coeff		Coeff	
	В	Sig	В	Sig	В	Sig	В	Sıg	В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training_for_ Job	99 06	784	-8 70	940	220 05	031	260 17	341	-31 87	799	-639 79	036
Percent_Workers_Claiming_Availability_Training_Inc reased	280 15	425	98 58	323	40 05	621	-191 60	415	131 12	286	760 24	003
Average_Expenditure_for_Training	-67 16	061	29 74	003	-18 68	038	43 72	068	10 58	246	-26 64	267
Proportion_Employees_Receiving_Classroom_Trainin	67496 74	086	-14160 99	240	-321 33	975	16920 86	369	25493 88	108	20347 28	470
Proportion_Employees_Receiving_OntheJob_Training	-45744 60	126	20472 29	042	1718 10	836	-10223 46	625	18223 43	124	-24695 69	204
Sum_Courses_in_Classroom_Format	1792 16	792	-3015 77	219	410 53	844	-8039 54	117	-11483 27	000	-618 05	894
Sum_Courses_in_OntheJob_Format	4733 47	413	-5251 96	026	3351 06	105	-258 51	950	-5705 69	029	-776 52	857
Average_Days_of_Sick_Paid_Leave	2089 13	698	285 65	887	-50 27	971	490 95	920	6096 91	002	2452 27	599
Average_Days_of_Other_Paid_Leave	1385 09	567	-481 67	287	-482 64	162	-416 62	901	-816 97	516	-2795 97	534
Average_Days_of_Unpaid_Leave	-2372 93	210	671 59	436	-1135 90	064	635 04	701	470 36	699	1451 87	474
Turnover	-38257 03	562	23661 97	189	-13868 95	445	-5301 72	889	-12540 61	477	52024 80	190
Median_Overall_Satisfaction	-13106 91	603	6859 99	419	-1373 54	811	27140 42	118	16231 03	059	2883 13	876
Median_Compensation_Satisfaction	-17282 71	437	13885 45	065	1631 52	768	-5847 95	701	-13428 70	118	-28190 77	064
Total_Number_of_Employees	2717 68	197	-559 61	482	180 90	788	-762 12	490	-614 26	469	-1018 92	352
Percentage_ExportSales	80 79	928	-246 37	662	2237 13	000	1063 28	234	414 57	194	-1665 94	028
Proportion_Employees_Using_Computers	-51824 86	280	-1296 62	942	-12676 25	529	-11744 41	714	36644 87	072	-49417 92	186
Percent_Workers_Having_Young_Kids	182 34	637	-13 23	925	-66 20	592	-618 27	021	7 46	956	-545 41	068
Workplace_Average_Pay	2 21	000	0 79	002	1 51	000	1 21	013	111	000	1 21	002
Average_Family_Other_Income	5 31	007	0 30	306	-1 20	025	0 02	978	-0 35	599	1 98	118
Average_Workforce_Tenure	-1294 13	628	-86 70	906	-143 23	820	-247 11	895	363 26	662	-1117 92	468
Sum_HR_Practices_Compensation	-41669 65	000	-4947 61	296	-1655 93	662	-13627 28	059	5469 50	229	-4733 98	590
Sum_HR_Practices_Organization_of_Work	-4478 79	558	-3973 01	214	-2165 93	357	1490 16	773	-4073 31	267	-9626 53	061
Average_Workplace_Promotions	27308 69	070	-6868 88	084	-8157 89	000	22915 67	025	-1291 59	682	4774 49	522
Proportion_Fulltime_HighSkilled_Workers	16327 10	747	15742 86	330	-22191 93	098	-14174 85	614	-10197 32	600	-1147 89	970
Proportion_Unionized_Workforce	98321 61	104	96146 12	045	-37772 06	062	6267 75	918	-16026 09	547	65643 96	207

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Table B1 2- Determinants of Productivity - Summary	Longitudinal (Diff	erential) F	Regressions Coe	efficients								
Organization Size 20-99												
		2001		2003		2005		2003		2005		2005
		1999	N-	2001	N	2003	N	1999	N	2001	NI-	1999
	N=	1018	N=	927	N=	1025	N=	801	N=	884		839
	Coen		Coeff		Соеп	L	Coeff		Соеп	0	Соеп	
	В	Sig	В	Sig	B	Sig	B	Sig	B	Sig	B	Sig
Percent_Workers_Claiming_Too_Little_Training_to r_Job	-341 12	048	-45 96	526	33 92	567	61 32	779	-328 76	040	132 94	617
Percent_Workers_Claiming_Availability_Training_I ncreased	21 43	897	-38 29	557	9 02	851	-187 17	276	-229 33	155	-257 97	231
Average_Expenditure_for_Training	7 46	315	2 31	536	-2 84	433	20 39	017	16 36	047	14 54	248
Proportion_Employees_Receiving_Classroom_Train	-894 31	934	13856 34	010	-3379 06	388	-27470 88	055	-10871 82	376	-13926 65	462
Proportion_Employees_Receiving_OntheJob_Training	29316 66	004	-3677 38	446	-5400 26	156	34652 56	016	2368 92	825	19662 03	287
Sum_Courses_in_Classroom_Format	8362 31	000	-2029 77	026	1770 16	011	10468 45	000	-1715 07	389	2760 76	327
Sum_Courses_in_OntheJob_Format	-5829 68	007	1167 17	247	-1264 64	065	-6627 21	008	-148 68	940	2846 97	323
Average_Days_of_Sick_Paid_Leave	10754 97	000	-262 56	499	-247 25	646	13046 87	000	2717 47	075	12948 92	000
Average_Days_of_Other_Paid_Leave	-1120 47	310	368 11	174	78 56	582	749 29	355	-207 85	683	-317 32	696
Average_Days_of_Unpaid_Leave	-543 02	359	-558 71	037	-685 97	025	-1145 23	150	-377 62	527	59 74	951
Turnover	-17514 76	407	-12283 30	085	1452 97	862	34251 22	146	-6887 62	702	7513 03	822
Median_Overall_Satisfaction	-22058 22	021	-4679 82	247	4745 24	092	-3613 64	731	22435 69	019	-5111 46	719
Median_Compensation_Satisfaction	2953 23	762	4226 26	220	1139 75	670	20928 32	031	-8641 22	308	9 56	999
Total_Number_of_Employees	21 95	916	282 78	026	-569 17	000	181 88	443	-37 88	876	-245 70	319
Percentage_ExportSales	-593 05	055	-469 79	001	-97 23	397	251 50	436	-400 18	204	-1204 19	005
Proportion_Employees_Using_Computers	-14202 82	529	-12637 53	166	30936 12	000	96060 89	000	-24603 72	187	-45608 40	108
Percent_Workers_Having_Young_Kids	100 82	635	-120 27	166	-85 45	141	-14 15	952	-10 42	954	-282 47	279
Workplace_Average_Pay	2 21	000	1 32	000	1 18	000	1 09	001	1 37	000	1 57	000
Average_Family_Other_Income	-0 32	606	0.05	866	-0 22	264	-0 55	408	-0 06	931	0 95	193
Average_Workforce_Tenure	1500 01	245	16 06	974	-621 90	052	1061 37	461	226 30	820	2322 78	098
Sum_HR_Practices_Compensation	-13206 84	004	-1985 61	305	1620 77	270	-13194 35	011	1714 95	651	-17258 20	007
Sum_HR_Practices_Organization_of_Work	1407 59	669	-246 35	851	-1800 48	054	-3348 72	308	-1809 85	528	5347 74	164
Average_Workplace_Promotions	-4160 91	491	-1208 54	573	-1566 02	275	2236 59	700	-10242 25	024	-9035 70	206
Proportion_Fulltime_HighSkilled_Workers	-20964 37	313	-15498 89	063	6718 50	321	-32283 80	101	45497 06	009	-310 02	989
Proportion_Unionized_Workforce	-13030 63	521	-20311 85	101	13647 50	175	-9035 06	711	-7992 23	707	17260 79	503

Table B1 3- Determinants of Productivity - Summary	/Longitudinal (D	offerentia	l) Regressions	Coefficie	nts							
Organization Size 100-499												
		2001		2003		2005		2003		2005		2005
	Ne	1999	N	2001	N-	2003	N-	1999	N-	2001	NI-	1999
		/09		094	N=	/38	N=	088	N-	042	IN-	040
	Coeff		Coeff		Coeff		Coeff		Coeff		Coeff	
	В	Sig	В	Sig	B	Sig	B	Sig	В	Sig	В	Sig
for_Job	-525 77	326	-246 55	242	-598 40	091	-264 78	687	-758 31	001	-800 86	234
Percent_Workers_Claiming_Availability_Training _Increased	473 12	368	104 46	578	-253 40	405	574 35	289	-499 01	016	486 30	489
Average_Expenditure_for_Training	-98 49	000	9 79	279	-34 48	121	-76 10	011	-2 54	806	-73 51	017
Proportion_Employees_Receiving_Classroom_Tra	-57968 11	096	-13951 99	225	23156 21	466	-80298 85	076	4257 90	769	-155214 65	002
Proportion_Employees_Receiving_OntheJob_Trai	-426 95	903	206 94	870	11652 25	659	38304 25	375	-4301 64	591	14741 74	738
Sum_Courses_in_Classroom_Format	19495 52	000	-3804 65	073	-1435 47	741	15695 21	009	332 69	893	18883 37	004
Sum_Courses_in_OntheJob_Format	-6167 10	207	4858 05	014	-1957 14	643	-9847 69	124	4637 15	041	-7952 71	197
Average_Days_of_Sick_Paid_Leave	-67 78	969	-1853 32	051	-686 39	732	673 90	779	-339 87	715	-2073 54	446
Average_Days_of_Other_Paid_Leave	-514 48	777	673 32	441	128 72	933	-1824 29	521	1162 11	217	-758 63	787
Average_Days_of_Unpaid_Leave	-420 00	827	137 55	870	-485 56	742	1606 37	590	630 85	483	-1268 04	654
Turnover	-67558 72	271	29416 42	189	18523 00	732	-82209 08	420	27232 53	364	-90005 58	349
Median_Overall_Satisfaction	-68462 64	016	17466 21	133	-3080 35	880	-81059 27	041	-11381 81	422	-72161 52	082
Median_Compensation_Satisfaction	84459 38	009	-12006 94	318	-22022 01	271	70217 66	047	856 39	949	39675 55	361
Total_Number_of_Employees	280 70	260	-37 19	713	-55 97	807	228 11	360	-59 82	414	69 78	726
Percentage_ExportSales	-1434 08	020	1265 98	000	-395 03	477	173 01	855	423 67	124	-337 51	716
Proportion_Employees_Using_Computers	-39812 82	431	7044 04	736	-31481 46	449	22307 44	715	49766 67	017	39820 17	539
Percent_Workers_Having_Young_Kids	-98 46	864	134 95	553	-26 17	947	280 96	684	174 33	528	-41 57	961
Workplace_Average_Pay	4 89	000	1 25	006	1 83	020	4 74	000	0 07	850	6 53	000
Average_Family_Other_Income	2 64	318	-0 69	458	-4 34	020	-5 42	123	-0 64	372	-2 47	459
Average_Workforce_Tenure	-1105 91	723	295 25	816	2168 30	329	-3362 94	329	2870 05	025	-11162 90	004
Sum_HR_Practices_Compensation	32791 60	016	678 25	880	2015 45	805	20130 38	176	-10918 55	053	26647 88	122
Sum_HR_Practices_Organization_of_Work	2629 46	766	959 63	763	-1986 91	742	-14643 31	152	-10573 30	002	-6768 63	535
Average_Workplace_Promotions	11334 34	405	5321 26	343	10389 90	312	18055 60	346	8333 01	167	43342 54	041
Proportion_Fulltime_HighSkilled_Workers	-122732 87	070	8799 04	760	-34997 85	577	38662 72	695	32075 94	272	-40893 04	667
Proportion_Unionized_Workforce	67293 37	240	65463 71	016	6312 05	944	42726 80	650	97799 06	001	12611 89	890

Table B1 4- Determinants of Productivity - Summary	/ Longitudinal (D	offerentia	l) Regressions	Coefficie	ents				······································			
Organization Size 100-499												
		2001		2003	T	2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
		185		152		156	<u> </u>	143	0.00	143	0	134
	Coeff		Coeff		Coeff		Coeff	-	Coeff	-	Coeff	
	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training_ for_Job	-2599 36	193	-357 15	372	314 52	462	1661 94	492	4 51	991	-6128 05	009
Percent_Workers_Claiming_Availability_Training _Increased	-1690 00	365	-705 91	060	735 59	057	-2962 60	098	363 98	440	-3989 57	073
Average_Expenditure_for_Training	92 46	155	-5 83	641	-7 33	559	-70 31	255	5 99	638	60 26	285
Proportion_Employees_Receiving_Classroom_Tra	-68776 82	567	-5521 01	829	14850 83	594	27466 63	847	-20248 92	471	10688 31	934
Proportion_Employees_Receiving_OntheJob_Trai	117035 32	258	9540 80	534	4054 73	790	168385 03	233	19140 14	418	2184 08	988
Sum_Courses_in_Classroom_Format	6604 03	699	2200 17	515	-5491 51	084	-15356 33	361	3544 64	423	-25538 72	244
Sum_Courses_In_OntheJob_Format	-7079 75	607	-5897 03	056	4778 31	100	829 51	955	-3092 98	478	4612 51	776
Average_Days_of_Sick_Paid_Leave	11210 86	048	822 93	617	-1187 72	510	-1055 85	913	3273 89	208	-3643 63	761
Average_Days_of_Other_Paid_Leave	-7469 89	421	-453 46	629	-658 12	568	-3991 89	751	130 06	942	-15932 19	210
Average_Days_of_Unpaid_Leave	-4058 26	569	418 45	780	5175 27	007	-3293 81	742	2290 90	222	2357 75	833
Turnover	103990 45	622	-8466 75	880	11121 91	737	-57457 07	696	28697 70	707	553165 14	339
Median_Overall_Satisfaction	7261 12	934	27061 14	230	-1682 94	937	-21270 86	830	-4819 03	862	-63228 59	508
Median_Compensation_Satisfaction	15377 78	891	-5600 65	809	-5648 58	782	-70690 37	483	-4876 12	846	-27353 91	806
Total_Number_of_Employees	-8 95	954	-7 81	876	-59 01	202	-66 09	658	-12 86	788	16 73	903
Percentage_ExportSales	958 09	662	-62 33	876	120 15	718	1484 11	356	-379 71	415	-2449 92	262
Proportion_Employees_Using_Computers	-151634 01	363	10886 65	812	43084 86	194	19897 23	904	35516 49	445	225586 87	265
Percent_Workers_Having_Young_Kids	-665 79	731	95 88	815	237 05	575	1723 15	473	200 95	713	-1169 11	647
Workplace_Average_Pay	-1 42	531	0.06	946	1 63	010	017	954	0 39	641	0 20	947
Average_Family_Other_Income	-12 54	247	0 67	788	-2 83	131	1 38	900	2 35	319	14 61	194
Average_Workforce_Tenure	10563 36	204	3370 11	130	-482 76	782	13286 07	167	-180 69	953	25264 34	021
Sum_HR_Practices_Compensation	75034 39	110	-11748 89	197	-5673 23	387	-2514 19	954	-12365 82	212	39770 67	398
Sum_HR_Practices_Organization_of_Work	19937 07	434	3308 08	555	-372 15	933	20490 99	453	-1890 39	800	-46029 84	176
Average_Workplace_Promotions	-49785 96	187	-8220 90	310	-2008 81	785	-78 19	998	2493 64	814	-26629 66	569
Proportion_Fulltime_HighSkilled_Workers	-147892 80	510	79028 95	168	-6735 87	872	-142449 54	503	96757 21	155	-80178 49	780
Proportion_Unionized_Workforce	-113059 08	591	-4851 56	940	32452 16	523	-113363 22	580	28919 16	643	76106 52	743





Table C 1 1 - Determinants of Productivity Summary Cross-S	ectional Regress	ion Coe	fficients					
Forestry mining of and an autostan								
Forestry, minning, on, and gas extraction		1999		2001		2003		2005
	N=	140	N=	123	N=	112	N=	127
······································	Coefficients	Sig	Coefficients	Sig	Coefficients	Sig	Coefficients	Sig
······································	В		В		В		В	
Percent Workers Claiming Too Little Training for Job	-3057 928	049	-606 623	331	-554 640	542	2109 006	047
Percent_Workers_Claiming_Availability_Training_Increased	315 444	814	502 624	428	60 132	920	310 687	667
Average_Expenditure_for_Training	14 579	432	-44 523	039	-16 313	218	-22 124	300
Proportion_Employees_Receiving_Classroom_Training	60306 212	546	20402 344	529	-7119 948	785	94318 614	074
Proportion_Employees_Receiving_OntheJob_Training	-149595 616	177	-16766 521	526	-54885 685	191	-103251 914	010
Sum_Courses_in_Classroom_Format	35938 249	032	12097 186	172	7260 832	477	-300 732	979
Sum_Courses_in_OntheJob_Format	8239 033	660	5320 167	536	9928 023	250	-4273 826	706
Average_Days_of_Sick_Paid_Leave	21279 563	093	-3383 289	680	-5791 000	564	-392 131	960
Average_Days_of_Other_Patd_Leave	10912 289	116	153 101	940	-3337 202	462	-4517 421	457
Average_Days_of_Unpaid_Leave	-3170 327	497	-490 429	927	-1408 550	811	100 714	959
Turnover	-113814 713	719	-57310 989	545	11185 496	934	-85103 376	407
Median_Overall_Satisfaction	-148482 243	090	18409 949	744	-27949 909	543	-28433 739	538
Median_Compensation_Satisfaction	171258 842	029	90559 517	155	49599 876	440	-41780 235	258
Organization_Age	-2064 858	312	-225 328	736	44 335	946	-1408 871	072
Total_Number_of_Employees	-221 969	421	95 750	429	-138 147	350	74 474	647
Percentage_ExportSales	626 800	581	386 207	317	791 800	127	591 943	420
Proportion_Employees_Using_Computers	245517 414	013	8480 458	861	-19074 335	779	-56033 025	449
Average_Age_Workforce	7221 383	218	4018 635	244	-2333 566	439	-11927 379	001
Percent_Workers_Having_Young_Kids	2149 225	051	-1318 404	076	-27 419	972	-1519 279	149
Workplace_Average_Pay	- 113	912	1 604	030	3 580	000	2 907	000
Average_Family_Other_Income	10 999	234	5 390	273	5 305	200	-2 823	268
Average_Workforce_Tenure	-12433 606	142	-525 823	903	4225 360	287	6784 986	169
Sum_HR_Practices_Compensation	-38013 606	254	-624 620	969	-8563 403	616	4177 053	801
Sum_HR_Practices_Organization_of_Work	-9703 324	659	-14572 339	189	-18254 503	240	-3363 804	827
Average_Workplace_Promotions	118991 137	001	-12614 165	494	-19233 839	225	752 326	977
Proportion_Fulltime_HighSkilled_Workers	13029 437	912	-39011 731	522	23591 284	739	34265 818	593
Proportion_Unionized_Workforce	-15761 312	872	-90497 736	094	-25006 952	679	31427 977	676

Table C 1 2 - Determinants of Productivity Summary Cross-S	ectional Regress	non Coe	fficients					
Labour intensive tertiary manufacturing		1000		2001		2003		2005
	N=	217	N=	184	N=	176	N=	175
	Coefficients	<u>Sig</u>	Coefficients	51a	Coefficients	170 S1σ	Coefficients	510
	B	Jig	B	Sig	B	Jig	B	515
Percent Workers Claiming Too Little Training for Job	-58 722	866	41 457	811	103 456	345	-25.063	876
Percent Workers Claiming Availability Training Increased	811 278	058	67 235	666	168 299	084	-211 571	189
Average Expenditure for Training	59 346	032	28 653	057	26 347	034	24 096	021
Proportion Employees Receiving Classroom Training	-23941 549	620	6958 865	212	23998 069	043	15361 038	375
Proportion Employees Receiving Onthe Job Training	14803 269	631	-2536 386	857	10331 468	276	9220 184	425
Sum Courses in Classroom Format	733 981	899	383 415	857	-2259 549	286	-2304 241	371
Sum Courses in OntheJob Format	-854 290	875	2131 613	440	-2339 729	206	-721 819	759
Average Days of Sick Paid Leave	-757 582	582	1122 896	601	-1339 428	204	1308 687	364
Average_Days of Other_Paid_Leave	16020 707	068	726 333	516	178 818	624	-1109 413	442
Average_Days_of_Unpaid_Leave	-99 032	966	-114 671	931	-648 430	593	-23 223	977
Turnover	-18760 271	714	28114 890	052	6948 999	691	25505 385	250
Median_Overall_Satisfaction	10384 038	729	301 238	985	938 432	873	-36374 677	001
Median_Compensation_Satisfaction	18819 028	391	9371 591	462	12341 838	046	7554 701	377
Organization_Age	-186 138	691	144 557	397	170 989	308	-393 993	059
Total_Number_of_Employees	118 131	224	16 177	642	-13 314	629	-16 187	684
Percentage_ExportSales	173 443	618	526 955	002	304 484	005	-9 647	942
Proportion_Employees_Using_Computers	-45102 686	436	17205 028	400	31339 598	015	10098 730	549
Average_Age_Workforce	30 749	988	-455 803	510	157 454	757	811 387	185
Percent_Workers_Having_Young_Kids	249 172	523	5 729	973	96 596	410	95 348	694
Workplace_Average_Pay	1 852	023	1 053	000	1 429	000	1 871	000
Average_Family_Other_Income	-3 683	447	451	871	-1 433	338	864	489
Average_Workforce_Tenure	3147 171	241	-212 861	856	335 419	583	100 111	919
Sum_HR_Practices_Compensation	-11869 061	264	16437 466	001	794 273	817	-2850 887	489
Sum_HR_Practices_Organization_of_Work	-503 199	948	-11464 284	003	-5228 720	004	3235 958	223
Average_Workplace_Promotions	-18599 153	332	-3315 804	657	4150 583	124	-7104 755	227
Proportion_Fulltime_HighSkilled_Workers	-45544 565	264	8988 788	632	-40448 236	009	12291 953	484
Proportion_Unionized_Workforce	-30390 412	362	-21386 986	161	-10574 014	340	42053 094	009

Table C 1 3 - Determinants of Productivity Summary Cross-S	ectional Regress	sion Coe	fficients		r		I	
Primary product manufacturing								
		1999		2001		2003		2005
	N=	194	N=	175	N=	191	N=	177
	Coefficients	Sig	Coefficients	Sig	Coefficients	Sig	Coefficients	Sig
	В		В		В		В	
Percent_Workers_Claiming_Too_Little_Training_for_Job	430 815	197	-976 807	000	-243 942	218	-364 212	279
Percent_Workers_Claiming_Availability_Training_Increased	176 710	544	-417 875	034	-157 282	416	-19 117	950
Average_Expenditure_for_Training	-18 788	328	31 418	027	64 842	000	34 987	031
Proportion_Employees_Receiving_Classroom_Training	53489 712	161	5054 467	820	-13668 583	453	-44350 007	085
Proportion_Employees_Receiving_OntheJob_Training	21375 019	519	25367 035	235	-3754 861	765	12701 213	536
Sum_Courses_in_Classroom_Format	6928 691	138	-3295 472	297	-1416 372	597	7050 188	095
Sum_Courses_in_OntheJob_Format	-4402 766	325	3832 541	224	600 698	834	-5870 874	146
Average_Days_of_Sick_Paid_Leave	-378 730	793	-1898 664	476	-510 920	646	3295 509	433
Average_Days_of_Other_Paid_Leave	9051 182	042	-557 806	528	-4780 232	003	-1815 289	063
Average_Days_of_Unpaid_Leave	-120 736	935	4279 967	001	1263 663	369	-904 078	454
Turnover	-37590 609	445	25054 634	464	30482 088	357	132605 237	039
Median_Overall_Satisfaction	23281 394	299	-36568 553	009	24924 525	072	12251 349	476
Median_Compensation_Satisfaction	-4913 151	766	42496 745	002	-42696 610	002	37573 104	031
Organization_Age	20 156	971	-489 693	117	-268 232	229	-497 223	158
Total_Number_of_Employees	24 688	711	20 318	689	-9 507	817	17 532	765
Percentage_ExportSales	-542 957	040	-20 131	909	114 039	505	-37 624	883
Proportion_Employees_Using_Computers	3579 683	936	23637 163	345	25570 747	229	-47536 015	123
Average_Age_Workforce	1003 297	608	2421 706	071	-3304 770	001	3655 002	032
Percent_Workers_Having_Young_Kids	-760 595	063	342 182	191	-140 616	536	504 151	197
Workplace_Average_Pay	485	439	1 786	000	1 500	000	1 548	000
Average_Family_Other_Income	- 169	965	3 203	020	-3 959	026	349	875
Average_Workforce_Tenure	2227 628	362	-301 710	858	3402 106	005	-2572 376	204
Sum_HR_Practices_Compensation	30146 196	001	3837 509	465	1815 893	714	18311 689	006
Sum_HR_Practices_Organization_of_Work	-17602 668	006	2809 544	475	1471 041	680	8493 073	103
Average_Workplace_Promotions	9324 299	407	12894 425	030	-6605 082	298	19523 896	089
Proportion_Fulltime_HighSkilled_Workers	10751 120	823	-38516 039	121	-16932 094	467	-9914 570	759
Proportion_Unionized_Workforce	23939 617	370	39888 644	039	-13178 446	431	15874 112	504

Table C 1.4 - Determinants of Productivity Summary Cross-S	ectional Regress	sion Coe	fficients					
						[<u> </u>
Secondary product manufacturing	ļ	1000	ļ			0000		-
		1999		2001		2003		2005
	N=	169	N=	164	N=	153	N=	168
	Coefficients	Sig	Coefficients	Sig	Coefficients	Sig	Coefficients	Sig
	В		В		В		В	
Percent_Workers_Claiming_Too_Little_Training_tor_Job	-222 196	_ 754	-46 560	810	-448 136	101	-24 232	907
Percent_Workers_Claiming_Availability_Training_Increased	-266 714	669	-267 910	120	-73 655	784	-222 526	337
Average_Expenditure_for_Training	44 363	308	- 724	958	-26 536	291	32 589	039
Proportion_Employees_Receiving_Classroom_Training	-34104 479	668	36428 024	026	-16065 274	546	-2765 711	887
Proportion_Employees_Receiving_OntheJob_Training	120158 081	048	22033 080	191	4592 883	784	2082 079	912
Sum_Courses_in_Classroom_Format	-1486 297	875	-188 652	944	8827 879	022	1276 045	729
Sum_Courses_in_OntheJob_Format	-15229 951	124	1155 266	677	-4965 579	181	5320 862	170
Average_Days_of_Sick_Paid_Leave	-4188 387	465	-614 832	412	2352 777	532	2334 920	526
Average_Days_of_Other_Paid_Leave	-4808 881	197	-1000 959	285	-2338 991	214	-5546 195	019
Average_Days_of_Unpaid_Leave	-568 100	852	-290 337	664	102 030	876	634 831	741
Turnover	66405 850	639	19172 172	408	51840 848	301	-43006 096	297
Median_Overall_Satisfaction	-6491 439	844	3678 333	796	-22735 605	188	-21478 797	184
Median_Compensation_Satisfaction	-31216 005	429	13742 904	315	-14958 450	343	30297 381	090
Organization_Age	-85 842	936	-392 625	188	317 016	186	-40 059	866
Total_Number_of_Employees	21 134	873	10 083	805	-5 294	925	-75 129	185
Percentage_ExportSales	-958 278	083	22 479	888	-415 680	037	-648 531	001
Proportion_Employees_Using_Computers	28631 118	745	3285 734	849	-21948 922	326	-16677 209	441
Average_Age_Workforce	69 903	981	-224 691	792	1170 957	400	814 742	518
Percent_Workers_Having_Young_Kids	1275 778	073	235 510	271	14 131	953	-45 584	869
Workplace_Average_Pay	1 213	336	1 236	001	1 721	000	1 326	000
Average_Family_Other_Income	719	864	2 797	091	540	809	-2 553	108
Average_Workforce_Tenure	-335 635	940	1123 138	289	-1028 339	465	-267 997	835
Sum_HR_Practices_Compensation	11728 225	492	4018 066	420	6502 164	328	7377 615	194
Sum_HR_Practices_Organization_of_Work	8851 002	453	-3864 489	270	15250 245	001	3961 108	350
Average_Workplace_Promotions	31465 453	134	6976 568	159	-2025 297	786	13776 163	094
Proportion_Fulltime_HighSkilled_Workers	23521 500	623	-15086 468	290	23231 255	334	-56154 420	003
Proportion_Unionized_Workforce	37613 205	429	9923 108	528	-18662 467	397	4454 355	838

Table C 1.5 - Determinants of Productivity Summary Cross-Sectional Regression Coefficients													
Table C 15 - Determinants of Houdedwiry Summary Closs-5													
Capital intensive tertiary manufacturing													
		1999		2001		2003		2005					
	N=	214	N=	211	N=	192	N=	208					
	Coefficients	Sıg	Coefficients	Sig	Coefficients	Sıg	Coefficients	Sig					
	В		В		В		В						
Percent_Workers_Claiming_Too_Little_Training_for_Job	-161 935	672	-319 277	052	243 094	224	-327 237	022					
Percent_Workers_Claiming_Availability_Training_Increased	-497 512	150	-34 657	812	366 078	013	-142 979	411					
Average_Expenditure_for_Training	26 527	286	2 594	761	26 091	052	20 347	085					
Proportion_Employees_Receiving_Classroom_Training	24669 611	540	8876 334	596	-8301 203	592	-19690 175	166					
Proportion_Employees_Receiving_OntheJob_Training	-14580 791	655	4949 879	680	-14976 181	248	8785 558	523					
Sum_Courses_in_Classroom_Format	642 449	896	1509 250	446	-2213 801	379	6698 308	001					
Sum_Courses_in_OntheJob_Format	-925 865	846	-2326 922	286	-297 974	909	-5177 106	011					
Average_Days_of_Sick_Paid_Leave	-4339 654	489	1088 092	301	2869 770	356	3090 592	026					
Average_Days_of_Other_Paid_Leave	-4106 181	307	225 241	891	580 244	525	-565 605	580					
Average_Days_of_Unpaid_Leave	-1424 817	629	-4166 198	056	340 730	835	-1447 544	185					
Turnover	-93005 207	178	-45331 317	035	-10903 304	788	39698 213	254					
Median_Overall_Satisfaction	-13293 202	575	5051 317	595	7908 333	429	13489 171	081					
Median_Compensation_Satisfaction	1079 054	956	-29079 831	000	10245 069	328	-6451 390	465					
Organization_Age	245 389	762	-528 010	106	-198 478	353	227 029	263					
Total_Number_of_Employees	22 638	722	-13 818	591	-5 419	702	-2 874	819					
Percentage_ExportSales	-219 202	498	-276 259	016	-158 119	185	39 274	703					
Proportion_Employees_Using_Computers	8435 709	808	37419 401	003	-3425 220	847	27898 906	058					
Average_Age_Workforce	2831 032	034	-847 146	231	-447 264	528	-250 162	730					
Percent_Workers_Having_Young_Kids	502 315	178	41 757	769	-272 638	075	-35 613	817					
Workplace_Average_Pay	1 185	017	728	000	1 211	000	776	000					
Average_Family_Other_Income	4 722	000	- 350	765	-2 408	251	- 546	519					
Average_Workforce_Tenure	-6317 846	014	1841 180	204	254 996	816	803 617	337					
Sum_HR_Practices_Compensation	13142 394	228	9986 984	018	4588 130	266	-111 025	977					
Sum_HR_Practices_Organization_of_Work	-3378 741	620	3373 790	140	3190 517	224	-1286 743	572					
Average_Workplace_Promotions	51888 604	001	12145 455	022	-12580 426	009	-5224 802	200					
Proportion_Fulltime_HighSkilled_Workers	-32284 627	420	-16062 718	157	20495 426	176	-4711 905	688					
Proportion_Unionized_Workforce	18862 699	666	43369 780	023	6801 380	714	-7768 329	567					

Table C 1 6 - Determinants of Productivity Summary Cross-Sectional Regression Coefficients												
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Construction												
		1999		2001		2003		2005				
	N=	324	N=	292	N=	303	N=	433				
	Coefficients	Sig	Coefficients	Sıg	Coefficients	Sig	Coefficients	Sıg				
	В		В		В		В					
Percent_Workers_Claiming_Too_Little_Training_for_Job	-746 606	003	-75 988	393	-138 178	677	-222 113	158				
Percent_Workers_Claiming_Availability_Training_Increased	14 204	954	162 573	030	91 060	727	-185 393	153				
Average_Expenditure_for_Training	15 848	352	15 052	022	-15 694	421	20 378	010				
Proportion_Employees_Receiving_Classroom_Training	23298 481	319	-2110 399	739	26504 132	293	-3009 032	757				
Proportion_Employees_Receiving_OntheJob_Training	-5865 368	813	4596 471	202	-2929 184	860	430 394	965				
Sum_Courses_in_Classroom_Format	-124 617	980	241 761	859	3128 045	593	-3401 807	231				
Sum_Courses_in_OntheJob_Format	-1900 231	707	-364 996	742	1862 193	711	410 956	856				
Average_Days_of_Sick_Paid_Leave	6714 389	084	-601 943	159	-728 027	906	992 201	680				
Average_Days_of_Other_Paid_Leave	-736 964	897	720 731	041	-4633 283	031	-1245 057	186				
Average_Days_of_Unpaid_Leave	1406 698	189	306 395	574	-2743 023	184	331 457	703				
Turnover	62137 114	195	16309 786	068	-7707 631	819	3591 493	752				
Median_Overall_Satisfaction	-50630 289	001	3188 634	483	10822 432	604	15485 431	140				
Median_Compensation_Satisfaction	10646 929	565	-5145 699	184	-30911 077	169	-29971 079	001				
Organization_Age	-357 965	570	492 790	004	-269 043	521	411 373	059				
Total_Number_of_Employees	-50 421	820	-12 783	766	-24 724	929	-4 087	974				
Percentage_ExportSales	686 782	324	1540 713	000	-3159 019	219	-862 891	047				
Proportion_Employees_Using_Computers	102327 956	003	-3370 912	744	40018 874	285	-14082 698	349				
Average_Age_Workforce	909 213	538	226 087	497	-2022 485	159	-1567 188	059				
Percent_Workers_Having_Young_Kids	344 518	205	-111 302	112	-399 428	242	-130 624	523				
Workplace_Average_Pay	1 308	000	1 079	000	1 212	000	1 016	000				
Average_Family_Other_Income	024	993	- 113	787	1 101	500	5 916	000				
Average_Workforce_Tenure	-1361 830	428	-1780 132	001	-737 490	739	50 593	960				
Sum_HR_Practices_Compensation	-6945 810	253	414 309	840	-5208 617	566	-6261 960	117				
Sum_HR_Practices_Organization_of_Work	-13327 166	005	-1502 859	342	-675 638	915	-795 212	780				
Average_Workplace_Promotions	953 352	921	1531 311	508	-9951 743	255	3064 093	493				
Proportion_Fulltime_HighSkilled_Workers	16022 136	506	4649 281	469	18524 034	472	-23889 783	067				
Proportion_Unionized_Workforce	46760 012	020	16416 998	009	-20101 302	427	-548 683	968				

Table C 1 7 - Determinants of Productivity Summary Cross-Sectional Regression Coefficients													
Transportation, warehousing, wholesale		1000		2001		2003		2005					
	N=	402	N=	306	N=	415	N=	186					
	Coefficients		Coefficients	590 Sta	Coefficients	Sig	Coefficients						
	B	Jig	B	Sig	B	Jig	B						
Percent Workers Claiming Too Little Training for Job	927.961	037	436 255	050	157 891	507	449 143	082					
Percent Workers Claiming Availability Training Increased	1572.008	000	-726.044	000	-441.059	036	-460 648	050					
Average Expenditure for Training	93 121	000	- 246	966	46 187	002	23 575	142					
Proportion Employees Receiving Classroom Training	34783 748	472	10066 727	540	-65206 332	024	-103300 777	000					
Proportion Employees Receiving OntheJob Training	52331 932	234	7509 638	542	18641 230	462	65708 851	006					
Sum Courses in Classroom Format	-2648 281	685	2251 939	379	4457 321	297	7438 429	043					
Sum Courses in OntheJob Format	-6226 986	336	2970 661	268	-4315 452	259	-6541 944	141					
Average Days of Sick Paid Leave	33142 656	000	489 595	831	-1067 554	247	-2075 078	544					
Average Days of Other Paid Leave	6155 177	439	2609 259	031	-626 852	271	-359 940	579					
Average Days of Unpaid Leave	-2365 030	570	-4488 491	018	-2135 888	295	658 211	657					
Turnover	49197 355	482	19722 224	357	38873 563	286	-81972 670	061					
Median_Overall_Satisfaction	62774 237	015	21926 665	099	28844 833	069	-19460 065	185					
Median_Compensation_Satisfaction	23936 342	373	33611 708	017	7810 743	645	15562 688	263					
Organization_Age	882 884	316	436 418	221	624 503	031	487 316	073					
Total_Number_of_Employees	-120 429	554	20 218	760	81 921	326	117 610	180					
Percentage_ExportSales	-2168 031	001	-27 977	888	-145 795	675	92 176	696					
Proportion_Employees_Using_Computers	-130528 267	004	9605 753	564	8568 273	697	38017 891	066					
Average_Age_Workforce	-5571 559	012	-1048 839	298	-318 689	805	-2149 631	096					
Percent_Workers_Having_Young_Kids	-980 689	114	542 339	044	188 564	502	464 254	142					
Workplace_Average_Pay	3 316	000	762	001	639	029	1 500	000					
Average_Family_Other_Income	-1 842	734	- 334	676	- 536	632	-1 299	420					
Average_Workforce_Tenure	-1712 857	542	3437 264	002	-1409 857	293	3420 269	007					
Sum_HR_Practices_Compensation	18351 003	156	4780 297	342	6785 259	321	-9286 568	131					
Sum_HR_Practices_Organization_of_Work	-9446 591	349	-5963 876	136	7035 851	160	-8959 612	075					
Average_Workplace_Promotions	2552 668	877	804 484	912	-6331 221	312	-11756 333	033					
Proportion_Fulltime_HighSkilled_Workers	-131218 423	007	-32687 520	116	-39064 183	129	-62065 361	014					
Proportion_Unionized_Workforce	-131661 881	030	62454 629	003	42632 764	146	58029 295	037					

Table C 1.8 - Determinants of Productivity Summary Cross-Sectional Regression Coefficients												
Communication and other utilities												
	ļ	1999		2001		2003		2005				
	N=	109	N=	126	N=	153	N=	129				
	Coefficients	Sig	Coefficients	Sıg	Coefficients	Sig	Coefficients	Sig				
	В		В	1	В		В					
Percent_Workers_Claiming_Too_Little_Training_for_Job	399 847	708	-343 411	206	-59 820	850	94 247	758				
Percent_Workers_Claiming_Availability_Training_Increased	-239 653	832	197 268	451	-213 983	400	218 981	507				
Average_Expenditure_for_Training	4 340	859	-4 247	653	3 868	745	12 835	330				
Proportion_Employees_Receiving_Classroom_Training	46362 544	661	7402 236	788	34697 114	294	-2352 526	924				
Proportion_Employees_Receiving_OntheJob_Training	-14193 450	885	43914 530	092	84838 591	003	8965 444	767				
Sum_Courses_in_Classroom_Format	-10882 210	492	-1313 119	731	-8014 150	101	7792 252	027				
Sum_Courses_in_OntheJob_Format	17530 362	236	-4485 834	310	6794 776	148	457 579	918				
Average_Days_of_Sick_Paid_Leave	-1810 916	741	-2472 824	366	713 809	787	-707 059	612				
Average_Days_of_Other_Paid_Leave	4395 300	491	-175 628	840	-1831 708	299	-1460 029	588				
Average_Days_of_Unpaid_Leave	2900 674	629	134 418	895	3424 344	420	-1710 227	379				
Turnover	-36447 190	570	-34471 344	383	6027 522	890	-5990 849	898				
Median_Overall_Satisfaction	-12297 157	832	-8326 284	596	7099 911	728	-44217 563	039				
Median_Compensation_Satisfaction	-8451 788	892	-3976 718	816	33744 879	088	3118 139	908				
Organization_Age	2285 023	172	-333 719	335	-409 984	177	-183 604	592				
Total_Number_of_Employees	-28 185	871	366 457	000	246 007	003	29 825	714				
Percentage_ExportSales	-636 218	808	182 821	615	160 895	767	-1941 262	006				
Proportion_Employees_Using_Computers	81588 542	355	27261 916	395	-38059 961	197	-52144 454	138				
Average_Age_Workforce	-206 191	972	-1061 517	385	-101 630	948	-2499 034	097				
Percent_Workers_Having_Young_Kids	1099 016	364	54 658	848	1041 685	011	-916 116	011				
Workplace_Average_Pay	3 399	154	1 268	009	2 469	000	1 844	000				
Average_Family_Other_Income	5 364	491	- 929	568	-7 445	022	-1 119	466				
Average_Workforce_Tenure	-4613 628	489	1722 906	377	-525 192	807	2435 990	200				
Sum_HR_Practices_Compensation	-9683 460	781	-11611 226	083	-12948 890	311	6112 819	504				
Sum_HR_Practices_Organization_of_Work	-5964 141	821	2965 138	517	9362 132	181	2326 524	729				
Average_Workplace_Promotions	917 555	954	-990 441	898	-20574 643	062	-619 944	956				
Proportion_Fulltime_HighSkilled_Workers	-80941 838	343	36435 539	175	-16222 264	623	-26648 633	369				
Proportion_Unionized_Workforce	-101037 435	397	-25797 457	264	-59374 238	058	-32039 530	275				

Table C. 1.9 - Determinants of Productivity Summary Cross-Sectional Regression Coefficients												
Tuble C 1 5 - Determinants of Froductivity Summary Closs 5												
Retail trade and consumer services												
		1999		2001		2003		2005				
	N=	278	N=	252	N=	275	N=	333				
	Coefficients	Sıg	Coefficients	Sig	Coefficients	Sig	Coefficients	Sıg				
	В		В		В		В					
Percent_Workers_Claiming_Too_Little_Training_for_Job	-99 361	652	-217 968	241	82 438	662	52 076	601				
Percent_Workers_Claiming_Availability_Training_Increased	175 514	376	399 940	026	-117 728	431	-108 638	241				
Average_Expenditure_for_Training	40 480	108	78 617	000	11 945	357	4 326	539				
Proportion_Employees_Receiving_Classroom_Training	-49796 323	019	11881 353	411	24994 750	040	-10387 193	259				
Proportion_Employees_Receiving_OntheJob_Training	-7417 528	698	-5207 399	464	-13602 071	189	-1305 920	868				
Sum_Courses_in_Classroom_Format	3941 663	169	-1293 441	545	-513 713	816	913 805	493				
Sum_Courses_in_OntheJob_Format	-1287 345	656	-4271 560	047	-356 463	873	1597 718	199				
Average_Days_of_Sick_Paid_Leave	-3219 330	274	5458 863	006	-654 683	680	1915 124	234				
Average_Days_of_Other_Paid_Leave	289 746	914	-979 848	187	-943 961	671	-451 609	494				
Average_Days_of_Unpaid_Leave	-899 840	134	164 262	851	293 453	772	-474 456	223				
Turnover	-333 827	986	-10671 186	306	-10290 415	499	4663 194	650				
Median_Overall_Satisfaction	-4098 272	783	14720 097	194	3016 747	807	-5001 843	430				
Median_Compensation_Satisfaction	-10193 269	396	-61533 387	000	782 994	932	-4696 043	413				
Organization_Age	123 750	764	-678 919	025	311 931	131	-209 138	077				
Total_Number_of_Employees	311 750	040	71 019	331	124 053	116	32 704	409				
Percentage_ExportSales	-1247 271	120	126 096	756	-115 924	773	-242 929	412				
Proportion_Employees_Using_Computers	40505 969	010	11983 667	321	24436 007	056	8288 164	263				
Average_Age_Workforce	169 439	836	1793 988	008	-180 011	795	205 577	525				
Percent_Workers_Having_Young_Kids	7 076	976	69 392	738	459 091	054	158 623	219				
Workplace_Average_Pay	4 329	000	1 276	001	1 955	000	1 186	000				
Average_Family_Other_Income	323	638	-1 091	388	- 108	910	009	978				
Average_Workforce_Tenure	1452 661	342	-2221 352	088	-1027 461	386	623 475	258				
Sum_HR_Practices_Compensation	917 956	863	-2209 813	582	-6087 777	150	7293 662	005				
Sum_HR_Practices_Organization_of_Work	-4646 956	220	-5263 720	057	-2051 628	511	-2729 619	079				
Average_Workplace_Promotions	-18793 460	015	18759 128	000	21954 823	001	5004 915	017				
Proportion_Fulltime_HighSkilled_Workers	-16235 462	452	-1588 665	925	-12341 723	415	-226 982	980				
Proportion_Unionized_Workforce	-54213 914	004	-17147 201	194	-11678 626	386	-1364 195	868				

Table C. 1.10 - Determinants of Productivity Summary Cross-Sectional Regression Coefficients												
Table C 1 10 - Determinants of Productivity Summary Cross-	Sectional Regres	ssion Co		}		1						
Finance and insurance												
		1999		2001		2003		2005				
	N=	203	N=	250	N=	240	N=	273				
	Coefficients	Sig	Coefficients	Sig	Coefficients	Sıg	Coefficients	Sig				
	В	1	В		В		В					
Percent_Workers_Claiming_Too_Little_Training_for_Job	846 946	176	730 475	005	-764 855	016	-31 771	934				
Percent_Workers_Claiming_Availability_Training_Increased	-217 502	794	162 254	510	-394 298	118	371 437	224				
Average_Expenditure_for_Training	9 761	706	-3 111	813	9 884	315	3 228	795				
Proportion_Employees_Receiving_Classroom_Training	-1754 129	976	-6208 964	772	-80729 112	000	-65699 440	006				
Proportion_Employees_Receiving_OntheJob_Training	-9991 054	829	-28729 925	161	22065 786	192	35139 969	146				
Sum_Courses_in_Classroom_Format	-687 633	925	1645 813	602	1799 628	547	2750 438	359				
Sum_Courses_in_OntheJob_Format	-6949 474	330	5235 203	172	4960 102	102	2501 242	427				
Average_Days_of_Sick_Paid_Leave	-1663 757	726	8914 867	002	-4116 492	246	2995 102	178				
Average_Days_of_Other_Paid_Leave	-3599 053	314	-189 347	884	1240 954	265	-2571 441	139				
Average_Days_of_Unpaid_Leave	-886 698	814	2888 869	111	-1286 853	308	2919 328	281				
Turnover	-143847 316	522	-59455 253	198	36522 998	678	-180825 067	020				
Median_Overall_Satisfaction	-52789 423	300	13998 441	416	15749 819	398	20905 907	262				
Median_Compensation_Satisfaction	57325 341	227	-20447 410	164	-10041 748	612	-8099 905	730				
Organization_Age	311 967	765	-881 162	001	-256 454	286	-100 646	721				
Total_Number_of_Employees	394 885	005	115 254	083	42 867	463	152 311	028				
Percentage_ExportSales	1741 956	408	-626 606	315	-310 028	676	2596 121	006				
Proportion_Employees_Using_Computers	78058 400	180	71388 807	020	-41411 242	253	138889 152	016				
Average_Age_Workforce	-5427 155	175	1355 309	259	5218 949	000	1769 313	126				
Percent_Workers_Having_Young_Kids	-977 342	233	38 963	886	-552 157	158	-1644 292	000				
Workplace_Average_Pay	- 407	768	1 047	001	773	009	1 098	000				
Average_Family_Other_Income	6 440	223	2 099	049	1 235	239	833	311				
Average_Workforce_Tenure	513 309	922	1343 164	523	-2927 749	104	-6950 417	000				
Sum_HR_Practices_Compensation	-13911 886	392	16030 168	014	-10577 282	145	-22245 584	003				
Sum_HR_Practices_Organization_of_Work	-7198 209	528	3326 703	533	-2858 458	538	-6505 494	189				
Average_Workplace_Promotions	-622 500	980	-874 946	897	-2402 259	729	20066 265	028				
Proportion_Fulltime_HighSkilled_Workers	85686 569	324	4790 497	854	72991 415	008	-44228 990	135				
Proportion_Unionized_Workforce	385 472	993	-62752 609	001	-88003 873	002	-67185 809	025				

Table C 1.11 - Determinants of Productivity, Summary Cross-Sectional Regression Coefficients												
Table C 1 11 - Determinants of Productivity Summary Cross-	Sectional Regres	sion Co										
Real estate, rental and leasing operations												
		1999		2001		2003		2005				
· · · · · · · · · · · · · · · · · · ·	N=	122	N=	104	N=	102	N=	109				
	Coefficients	Sig	Coefficients	Sıg	Coefficients	Sig	Coefficients	Sig				
	В		В		В		В					
Percent_Workers_Claiming_Too_Little_Training_for_Job	542 746	469	633 433	159	57 137	936	-464 798	360				
Percent_Workers_Claiming_Availability_Training_Increased	-738 997	493	1277 588	072	89 344	900	-272 269	518				
Average_Expenditure_for_Training	65 714	318	39 002	181	147 219	045	5 554	912				
Proportion_Employees_Receiving_Classroom_Training	22899 784	743	-101606 464	163	-12906 211	894	68067 130	224				
Proportion_Employees_Receiving_OntheJob_Training	-102632 081	236	76230 658	244	111985 423	117	106960 130	058				
Sum_Courses_in_Classroom_Format	17000 602	264	14878 231	195	3552 171	790	-9570 892	238				
Sum_Courses_in_OntheJob_Format	-12960 186	331	-20680 210	089	-9701 943	377	-3470 270	617				
Average_Days_of_Sick_Paid_Leave	32676 470	025	-24841 775	025	4593 234	693	-10103 022	218				
Average_Days_of_Other_Paid_Leave	-44604 934	098	28178 481	035	-6935 347	696	8323 113	400				
Average_Days_of_Unpaid_Leave	-2104 048	539	-555 409	936	687 384	901	-6222 116	259				
Turnover	-17452 435	898	9213 408	886	30045 082	833	-12032 464	914				
Median_Overall_Satisfaction	14842 287	780	54504 381	141	6843 178	872	-7588 320	790				
Median_Compensation_Satisfaction	-114938 435	060	-12974 278	688	-31477 558	605	-19257 468	611				
Organization_Age	820 208	671	5405 026	000	404 960	683	1009 485	215				
Total_Number_of_Employees	11 288	954	180 415	421	-495 898	172	-108 010	623				
Percentage_ExportSales	3463 408	017	-45 437	958	465 675	709	-2146 161	265				
Proportion_Employees_Using_Computers	28876 926	709	37110 328	551	-17692 379	777	-14960 282	754				
Average_Age_Workforce	-9184 424	008	-388 286	889	2359 635	463	-70 203	971				
Percent_Workers_Having_Young_Kids	289 750	721	-490 901	512	-762 300	324	578 992	420				
Workplace_Average_Pay	5 025	000	1 175	055	2 864	001	1 323	013				
Average_Family_Other_Income	-4 097	424	-1 570	202	2 434	500	-5 794	086				
Average_Workforce_Tenure	14963 087	051	-4860 718	271	4378 061	425	-1178 688	699				
Sum_HR_Practices_Compensation	26136 791	256	2933 821	846	-18297 412	320	13493 119	324				
Sum_HR_Practices_Organization_of_Work	2718 115	873	6789 083	572	10548 003	527	11709 246	187				
Average_Workplace_Promotions	5616 437	867	-4372 716	862	2891 603	916	-11857 740	278				
Proportion_Fulltime_HighSkilled_Workers	-14467 056	873	-56077 925	387	-23321 171	713	61803 847	220				
Proportion_Unionized_Workforce	31675 072	718	-117413 164	094	-130883 381	211	-11392 352	876				

Table C.1.12 - Determinants of Productivity, Summary Cross-Sectional Regression Coefficients												
Table C 1 12 - Determinants of 1 roductivity Summary cross-c					[
Business services												
		1999		2001		2003		2005				
	N=	219	N=	216	N=	254	N=	287				
	Coefficients	Sig	Coefficients	Sıg	Coefficients	Sig	Coefficients	Sıg				
	В		В		В		В					
Percent_Workers_Claiming_Too_Little_Training_for_Job	1908 487	034	-612 186	582	-1075 936	327	-964 526	425				
Percent_Workers_Claiming_Availability_Training_Increased	737 117	430	-293 056	807	-1038 995	264	111 806	915				
Average_Expenditure_for_Training	-32 813	489	-28 536	598	-67 712	281	-16 393	768				
Proportion_Employees_Receiving_Classroom_Training	62836 342	290	-31068 478	806	14354 084	870	122691 673	163				
Proportion_Employees_Receiving_OntheJob_Training	-101571 506	107	51582 789	635	49898 572	546	36777 874	623				
Sum_Courses_in_Classroom_Format	-7973 644	456	-4079 209	822	3871 253	775	-19604 761	258				
Sum_Courses_in_OntheJob_Format	15294 419	198	1098 901	951	279 765	985	-5578 360	724				
Average_Days_of_Sick_Paid_Leave	-16889 121	269	26720 305	023	-14609 476	379	-4632 640	773				
Average_Days_of_Other_Paid_Leave	-4310 875	720	738 952	909	-17437 798	153	-8992 656	608				
Average_Days_of_Unpaid_Leave	-1197 410	724	-653 186	959	-3134 167	699	3873 422	509				
Turnover	81044 619	437	-3365 290	982	-250319 472	160	-154029 937	261				
Median_Overall_Satisfaction	-49002 234	391	48874 485	444	31257 042	635	33074 478	620				
Median_Compensation_Satisfaction	48763 179	367	-54610 475	440	16726 706	729	-59222 081	358				
Organization_Age	9394 048	001	2831 622	096	2917 141	051	1705 310	166				
Total_Number_of_Employees	143 940	545	84 295	667	-17 780	923	97 583	592				
Percentage_ExportSales	418 428	638	197 624	884	-347 434	735	189 410	845				
Proportion_Employees_Using_Computers	-20117 891	768	32678 933	748	69276 978	453	42124 380	706				
Average_Age_Workforce	-877 070	821	9791 062	050	-7622 700	106	-2429 743	613				
Percent_Workers_Having_Young_Kids	-103 003	926	1329 839	373	1431 398	218	110 930	930				
Workplace_Average_Pay	4 271	000	3 184	004	5 016	000	3 707	000				
Average_Family_Other_Income	1 695	608	-1 309	744	-4 777	384	- 220	958				
Average_Workforce_Tenure	-7276 789	331	-4590 535	592	2206 951	751	-4500 844	545				
Sum_HR_Practices_Compensation	45305 758	016	17081 079	479	-4812 494	850	127 779	996				
Sum_HR_Practices_Organization_of_Work	-17712 151	132	-7713 882	769	-6998 287	759	11280 306	519				
Average_Workplace_Promotions	-21005 850	450	73030 113	114	14147 360	640	33798 433	106				
Proportion_Fulltime_HighSkilled_Workers	-258859 455	002	-47703 348	623	-132557 244	149	-74300 575	452				
Proportion_Unionized_Workforce	-214800 979	312	-204450 547	238	12674 998	917	36068 664	784				

Table C 1 13 - Determinants of Productivity Summary Cross-Sectional Regression Coefficients													
Education and health convises													
		1999		2001		2003		2005					
	N=	35	N=	38	N=	47	N=	62					
	Coefficients	Sig	Coefficients	Sig	Coefficients	Sig	Coefficients	Sig					
	В		В		В		В						
Percent Workers Claiming Too Little Training for Job	-395 445	277	-218 043	610	-538 459	028	-311 922	573					
Percent_Workers_Claiming_Availability_Training_Increased	347 836	244	-46 870	822	-506 448	024	-370 215	347					
Average_Expenditure_for_Training	41 035	078	18 412	283	19 810	123	-136 886	027					
Proportion_Employees_Receiving_Classroom_Training	42424 749	051	-11374 453	503	-16974 651	385	93532 073	114					
Proportion_Employees_Receiving_OntheJob_Training	21370 364	446	4168 998	803	22271 339	250	61085 843	162					
Sum_Courses_in_Classroom_Format	-1711 247	594	21 035	993	-1388 887	673	-8634 000	271					
Sum_Courses_in_OntheJob_Format	-3955 308	366	1943 494	364	1213 715	768	6772 972	452					
Average_Days_of_Sick_Paid_Leave	936 277	305	2280 404	297	-2482 327	248	-4920 787	462					
Average_Days_of_Other_Paid_Leave	3216 825	674	-2106 739	729	-3093 800	051	9584 416	507					
Average_Days_of_Unpaid_Leave	-2026 928	155	-157 953	935	-1687 814	299	3228 413	485					
Turnover	-27356 247	687	-240 358	996	-83536 719	028	37613 629	701					
Median_Overall_Satisfaction	-24432 019	055	-1325 084	929	-55379 545	001	47898 892	078					
Median_Compensation_Satisfaction	-5862 779	612	5608 363	629	37280 795	021	-9052 060	754					
Organization_Age	890 520	210	-173 904	602	149 270	671	941 436	286					
Total_Number_of_Employees	1 650	924	-33 322	321	29 988	316	-96 283	372					
Percentage_ExportSales	883 558	853	9769 295	427	-5902 461	818	663 402	397					
Proportion_Employees_Using_Computers	65476 938	040	70730 005	000	-95482 936	016	-1404 235	977					
Average_Age_Workforce	-430 044	746	-723 113	483	-813 015	454	2045 592	318					
Percent_Workers_Having_Young_Kids	323 253	440	152 710	591	959	996	969 975	153					
Workplace_Average_Pay	- 136	851	210	643	3 510	001	2 249	037					
Average_Family_Other_Income	3 517	036	2 437	180	- 663	490	- 275	956					
Average_Workforce_Tenure	995 753	716	999 737	612	1760 298	321	1948 037	644					
Sum_HR_Practices_Compensation	-6575 921	610	-10710 600	096	-18788 344	018	37486 858	024					
Sum_HR_Practices_Organization_of_Work	6069 904	260	-1852 821	601	2325 141	557	-21697 677	053					
Average_Workplace_Promotions	-1107 370	935	-23033 917	209	7511 978	316	15867 480	454					
Proportion_Fulltime_HighSkilled_Workers	-56071 580	083	-972 016	956	1801 957	931	83613 960	083					
Proportion_Unionized_Workforce	-35571 482	134	12721 405	478	-31949 690	169	371 695	994					

Table C 1 14 - Determinants of Productivity Summary Cross-	Sectional Regres	sion Co	efficients					
Information and cultural industries								
		1999	·	2001		2003		2005
	N=	135	N=	138	N=	139	N=	152
	Coefficients	Sig	Coefficients	Sıg	Coefficients	Sıg	Coefficients	Sıg
	В		В		В		В	
Percent Workers Claiming Too Little Training for Job	-67 796	750	-25 290	842	60 632	856	-75 670	848
Percent_Workers_Claiming_Availability_Training_Increased	41 402	870	-231 121	010	283 832	228	-261 737	403
Average_Expenditure_for_Training	28 073	025	-2 941	590	-25 169	408	-55 545	043
Proportion_Employees_Receiving_Classroom_Training	10061 203	631	19342 924	101	-2184 115	952	33544 825	337
Proportion_Employees_Receiving_OntheJob_Training	-17666 609	416	-12973 465	169	-5770 631	829	128192 160	000
Sum_Courses_in_Classroom_Format	-867 231	786	-43 403	972	4561 415	403	4929 818	397
Sum_Courses_in_OntheJob_Format	1097 256	686	1314 231	311	3711 108	353	-17843 807	001
Average_Days_of_Sick_Paid_Leave	628 033	850	-3642 235	013	2948 431	352	710 667	831
Average_Days_of_Other_Paid_Leave	-1494 440	366	5215 927	000	2990 609	092	-1530 610	785
Average_Days_of_Unpaid_Leave	469 400	638	862 252	199	-40 428	979	5402 742	006
Turnover	-95762 930	006	-2458 072	865	-1317 914	971	-204986 801	000
Median_Overall_Satisfaction	-13238 323	231	-6448 511	340	-44257 697	017	-44306 603	064
Median_Compensation_Satisfaction	-3039 457	820	-8463 386	081	15914 324	481	-23767 212	293
Organization_Age	48 979	906	-462 353	002	-427 536	187	490 407	222
Total_Number_of_Employees	-20 928	572	36 137	019	-49 609	292	31 322	620
Percentage_ExportSales	474 608	092	-216 190	016	-928 574	017	-558 930	143
Proportion_Employees_Using_Computers	4954 310	747	-13731 209	135	-20596 083	456	-100928 269	002
Average_Age_Workforce	-2263 286	095	-398 372	260	-525 030	746	2488 986	117
Percent_Workers_Having_Young_Kids	121 592	660	6 779	945	386 866	299	-640 533	172
Workplace_Average_Pay	1 034	001	1 232	000	695	044	3 292	000
Average_Family_Other_Income	1 917	364	1 247	087	-4 991	018	6 9 5 5	007
Average_Workforce_Tenure	1323 505	442	1609 486	002	1611 113	389	-854 266	762
Sum_HR_Practices_Compensation	10956 578	039	5343 721	051	-8506 219	319	8201 060	432
Sum_HR_Practices_Organization_of_Work	4420 116	212	-4143 500	008	12350 225	048	-3370 474	639
Average_Workplace_Promotions	-2681 512	683	6422 170	101	1270 147	886	15313 372	128
Proportion_Fulltime_HighSkilled_Workers	54095 099	001	-10129 193	206	-46452 601	084	-13170 200	717
Proportion_Unionized_Workforce	-3925 148	815	4407 781	578	10268 875	656	-76193 396	039





Table D 1 1 - Determinants of Productivity Summary Longitudinal (Differential) Regression Coeff												
Forestry, mining, oil, and gas extraction												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	95	N=	87	N=	89	N=	73	N=	76	N=	67
	Coeff	Sig	Coeff	Sug	Coeff	Sig	Coeff	Sig	Coeff	Sia	Coeff	Sig
	В	Sig	В	Sig	В	Jig	В	Jig	В	Sig	В	Jig
Percent_Workers_Claiming_Too_Little_Training_for_Job	677 8	571	-25 5	965	-295 5	442	-3087 0	008	-3290 8	000	-2946 6	137
Percent Workers Claiming Availability Training Increased	1042 2	262	146 6	758	-992 6	014	717 4	476	-2208 6	009	-3443 6	044
Average_Expenditure_for_Training	160	228	12	912	-3 0	830	15 4	231	-1 1	957	43 9	263
Proportion_Employees_Receiving_Classroom_Training	-8999 4	848	-5457 7	831	-5422 5	745	2296 7	955	85042 7	113	-113748 7	275
Proportion_Employees_Receiving_OntheJob_Training	-26497 0	500	-1080 9	972	-16933 2	363	-51914 1	421	68078 0	051	39706 8	629
Sum_Courses_m_Classroom_Format	10257 4	321	1368 5	833	605 6	899	-6374 9	610	-181173	221	54575 8	012
Sum_Courses_in_OntheJob_Format	-13832 3	122	2241 6	791	-5894 1	266	-6557 6	463	-10702 5	360	-19414 8	315
Average Days of Sick Paid Leave	-4526 0	559	-5164 1	416	-7356 9	027	4589 1	662	-18365 4	039	-21402 1	048
Average_Days_of_Other_Paid_Leave	17301 4	018	-1623 8	418	-3162 8	161	295 6	955	-7182 5	032	20002 9	023
Average_Days_of_Unpaid_Leave	8800 4	169	1076 5	758	-10002 3	000	-482 0	953	35022 3	000	5250 8	656
Turnover	36951 0	749	-51023 0	621	126412.6	025	1808504	517	65171 7	539	-136901 2	623
Median_Overall_Satisfaction	77552 5	147	-9662 5	740	60654 5	005	48518 6	488	-94875 5	082	206869 3	043
Median_Compensation_Satisfaction	-18943 4	722	4874 8	914	-26595 6	325	80 1	999	-60609 2	394	-128776 3	348
Total Number of Employees	-556 8	225	-428 4	430	-422 7	128	768 8	174	871	892	767 7	334
Percentage_ExportSales	-1007 2	171	-340 0	569	-290 0	522	-176 7	902	-231 8	853	-8981 4	000
Proportion_Employees_Using_Computers	-54263 7	713	-137460 6	065	-81596 8	119	-156001 6	263	363884 1	006	-503614 7	065
Percent_Workers_Having_Young_Kids	-270 0	802	-441 3	550	908 4	040	-669 8	600	2452.4	021	2960 0	250
Workplace_Average_Pay	20	013	09	294	30	000	41	001	-04	794	37	049
Average_Family_Other_Income	13	788	20	470	-1 0	561	50	408	-12 9	001	-7 5	449
Average_Workforce_Tenure	-5563 2	372	-1794 0	575	-2695 5	243	-11077 9	150	-2431 6	642	7485 6	388
Sum_HR_Practices_Compensation	-2723 6	905	35278 0	008	-27227 8	001	215261	444	30055 5	199	-12344 2	776
Sum_HR_Practices_Organization_of_Work	-837 0	952	8854 8	320	-5334 6	397	-364786	109	-2261 7	887	15112 0	651
Average_Workplace_Promotions	6891 9	765	-7458 5	521	-157192	089	-32903 9	283	-6874 2	730	-40665 9	358
Proportion Fulltime HighSkilled Workers	-21026 2	801	-40224 7	547	2973 6	948	186408 1	128	658772 9	000	-34543 7	850
Proportion_Unionized_Workforce	206231 5	067	-101013 0	160	-25512 6	842	-42870 0	706	15239 2	905	303027 0	073

Table D 1 2 - Determinants of Productivity Summary Longitud												
Labour intensive tertiary manufacturing												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	158	N=	132	N=	133	N=	130	N=	119	N=	126
	Coeff	Sig										
	В	Sig										
Percent_Workers_Claiming_Too_Little_Training_for_Job	281 3	578	-224 2	364	-77 1	444	-919 9	038	-143 5	625	-779 5	113
Percent_Workers_Claiming_Availability_Training_Increased	421 5	373	138 2	533	33 1	716	-508 7	231	120 6	625	-1269 8	002
Average Expenditure_for_Training	66 6	082	-159	509	-1 0	944	-19	948	136	536	-35 8	153
Proportion_Employees_Receiving_Classroom_Training	-2076 8	923	16032 7	511	25074 8	094	-66559 5	142	-17942 0	491	3018 6	952
Proportion_Employees_Receiving_OntheJob_Training	-62620 9	117	-18435 9	448	-2920 6	773	47462 6	217	-12014 6	581	34178 5	400
Sum_Courses_in_Classroom_Format	-140 0	981	353 2	924	231 4	909	11416 5	104	775 9	764	2214 9	715
Sum_Courses_in_OntheJob_Format	-2214 7	775	1756 9	601	3779 7	041	-5413 1	363	307	993	-18380 1	002
Average Days of Sick Paid Leave	-164 8	928	-1100 6	661	906 3	208	-3591	864	357 2	878	2831 9	100
Average_Days_of_Other_Paid_Leave	2700 5	395	-354 5	666	-26 5	940	-2956 2	540	1355 6	469	-449 6	867
Average Days of Unpaid Leave	-1925 4	623	810 7	672	245 8	726	-5019 9	230	892 7	649	391	987
Turnover	687894	201	3534 7	911	-353794	067	5948 9	924	93525 3	024	-76979 6	290
Median_Overall_Satisfaction	11346 5	770	5071 3	710	8447 3	188	-2756 4	913	-47395 7	007	-24067 7	330
Median_Compensation_Satisfaction	-35434 0	315	14237 1	322	1820 0	743	-12468 1	624	-14262 9	396	-6802 7	809
Total_Number_of_Employees	-121 5	638	30 0	837	919	416	342 5	265	1514	359	6512	008
Percentage_ExportSales	-301 6	695	-59 6	893	-469 1	012	801 3	273	667 1	033	477 6	408
Proportion_Employees_Using_Computers	-58977 4	416	57876 8	209	-20558 3	284	41963 6	552	60898 9	106	35724 1	609
Percent_Workers_Having_Young_Kids	182 8	774	285 0	329	-155 8	250	395 7	390	2196	518	99	985
Workplace_Average_Pay	-08	481	12	069	20	000	27	017	05	204	-12	166
Average_Family_Other_Income	-5 8	252	-2 3	370	-3 4	002	28	454	-01	961	-1 1	730
Average_Workforce_Tenure	2250 1	521	3673 5	019	30 2	964	-2331 8	477	2433 4	219	1280 4	621
Sum_HR_Practices_Compensation	18790 6	275	13920 5	057	-2477 5	448	2887 6	819	14576 9	041	451 6	968
Sum_HR_Practices_Organization_of_Work	-1553 4	904	-425 5	942	-896 5	750	14757 4	112	-12381 5	023	6328 8	386
Average_Workplace_Promotions	-39807 9	090	-15893 1	074	-7371 3	002	10940 1	280	10696 1	306	52809 9	018
Proportion_Fulltime_HighSkilled_Workers	-31482 3	655	-388186	495	2753 8	891	-47947 4	582	-48622 6	193	-88372 9	058
Proportion_Unionized_Workforce	-51814 6	504	-12529 1	772	708183	143	94739 6	261	19509 1	645	-7001 2	922

Table D 1 3 - Determinants of Productivity Summary Longitu	dınal (Dıfferer	itial) Reg	gression Coeff	•								
Primary product manufacturing												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	154	N=	141	N=	157	N=	145	N=	132	N=	134
	Coeff	Sia	Coeff	5.0	Coeff	Sig	Coeff	S.a	Coeff	S	Coeff	610
	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig
Percent Workers Claiming Too Little Training for Job	-1016 8	009	67 8	721	225 1	486	1335 0	001	-869 7	001	-19	995
Percent_Workers_Claiming_Availability_Training_Increased	-250 9	415	33 0	859	-3 0	989	-150 4	639	571	803	-95 4	739
Average_Expenditure_for_Training	-36	886	90	582	54 0	046	104 0	000	45 8	021	183	370
Proportion_Employees_Receiving_Classroom_Training	-69144 4	041	12903 2	523	4192 0	882	498471	140	26322 7	249	14666 9	617
Proportion_Employees_Receiving_OntheJob_Training	103750 3	001	961 7	957	54073 4	057	-28786 0	350	16152 4	424	115291 1	000
Sum_Courses_in_Classroom_Format	12073 7	029	-3114 1	210	-2677 6	508	6046 8	144	-7903 3	031	-4057 8	413
Sum_Courses_in_OntheJob_Format	-4896 8	341	4837 1	110	-4602 1	308	4796 1	300	1577 6	612	-3435 7	400
Average Days of Sick Paid Leave	3065 3	302	-919 9	578	-631 3	721	-6178	811	5525 3	039	974 3	525
Average_Days_of_Other_Paid_Leave	-763 3	540	-1469 5	159	-777 1	494	-3449 2	215	-645 7	439	-9245 3	000
Average_Days_of_Unpaid_Leave	988 3	548	-47 7	957	2832 7	322	-404 7	774	3156 8	006	1681 4	248
Turnover	-6575 0	919	10209 3	763	-35288 8	506	-19944 9	667	-3438 0	941	-47025 7	308
Median_Overall_Satisfaction	144911	545	-31204 8	025	2043 1	911	-23928 7	198	21357 2	204	-18241 3	324
Median_Compensation_Satisfaction	-44096 4	043	17972 9	181	-581 5	972	-12175 6	569	-6414 4	645	836 2	971
Total_Number_of_Employees	870 2	001	62 8	774	245 8	486	-77 6	768	-48 4	807	-556	771
Percentage_ExportSales	-1500 5	001	23 4	951	133 9	766	-1445 4	003	5211	184	-976 1	017
Proportion_Employees_Using_Computers	38741 7	485	-45261 1	250	-25504 9	641	-136090 9	019	-32455 6	324	-42406 4	326
Percent_Workers_Having_Young_Kids	163 0	716	144 3	510	247 0	407	-390 5	361	358 4	206	-740 8	075
Workplace_Average_Pay	26	000	14	000	15	015	-2 8	001	24	000	-0 6	474
Average_Family_Other_Income	34	276	09	401	-09	671	-4 3	344	10	410	-4 6	098
Average_Workforce_Tenure	250 1	913	1399 8	292	976 7	656	-2336 6	334	-1950 3	186	-2961 7	072
Sum_HR_Practices_Compensation	-8656 0	413	2031 0	705	6399 2	415	-6341 7	518	-3529 8	616	3326 8	749
Sum_HR_Practices_Organization_of_Work	778 7	897	-13333 4	003	2178 3	723	-5261 0	387	3415 2	457	7995 2	240
Average_Workplace_Promotions	136190	129	-277 8	954	14384 8	071	-7608 4	470	9993 7	164	21275 3	029
Proportion_Fulltime_HighSkilled_Workers	-71290 2	222	-182351 2	000	29976 8	478	160128 7	022	-25265 4	486	-60742 1	355
Proportion_Unionized_Workforce	241 0	996	-12588 7	765	-55024 5	408	120690 6	083	52389 3	316	121685 6	054

Table D 1 4 - Determinants of Productivity Summary Longitudinal (Differential) Regression Coeff												
Secondary product manufacturing												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	143	N=	127	N=	121	N=	120	N=	110	N=	106
	Coeff	S	Coeff	C.a	Coeff	C.c.	Coeff	6.a	Coeff	S	Coeff	S.c.
	В	Sig	В	and a sig	В	Sig	В	Sig	В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training_for_Job	-546 2	356	80 3	654	-166 7	417	-165 3	850	-186 8	342	-169 0	845
Percent_Workers_Claiming_Availability_Training_Increased	-270 5	651	-39 4	817	-610	748	144 8	851	-4716	004	927 8	179
Average_Expenditure_for_Training	46 9	103	-22 3	172	71	728	-106	871	176	133	-26	967
Proportion_Employees_Receiving_Classroom_Training	90208 0	042	28344 6	048	368894	129	-36100 7	640	68591	683	61791 4	497
Proportion_Employees_Receiving_OntheJob_Training	40587 4	371	2432 9	867	-7648 9	561	49205 7	501	-37914 7	040	183499 4	018
Sum_Courses_in_Classroom_Format	-261 3	969	936 3	747	-6319 7	068	-7901 7	524	284 5	914	-396 9	972
Sum_Courses_in_OntheJob_Format	-6181 5	488	-6047 0	030	-1694 8	595	-8449 7	492	11492 2	000	-212129	116
Average Days of Sick Paid Leave	-795 7	746	-741 4	314	-3606 2	198	-4034 8	592	-6032 3	053	-242217	017
Average_Days_of_Other_Paid_Leave	1592 0	461	-284 3	822	-3193 6	035	-7557 4	098	-723 6	391	1727 0	700
Average Days of Unpaid Leave	777 5	808	-683 5	165	-469	972	-223 1	912	-1530 7	059	-3231 7	361
Turnover	-62568 5	428	38061 0	085	-656599	202	218786 9	335	63258 4	011	-143591 6	513
Median_Overall_Satisfaction	-12920 7	682	1964 4	842	-23682 7	043	-16476 5	693	10126 2	361	-12294 6	799
Median_Compensation_Satisfaction	26507 2	491	28154	779	-5828 4	635	-26457 7	588	-8295 1	475	81140	879
Total_Number_of_Employees	63 3	844	1183	416	215 8	277	521 0	123	-99 7	464	590 7	183
Percentage_ExportSales	-101 7	889	85 0	718	536 6	140	-843 3	547	-3196	212	-771 0	583
Proportion_Employees_Using_Computers	-36338 5	583	38173	825	-70126 5	030	-90090 3	330	12854 3	530	39296 4	711
Percent_Workers_Having_Young_Kids	270 1	749	279 2	128	1589	500	381.0	572	275 7	199	1666 1	139
Workplace_Average_Pay	-0 5	718	20	000	12	001	21	150	05	205	-0 2	910
Average_Family_Other_Income	06	877	26	061	-10	478	16	734	-3 2	024	16	790
Average_Workforce_Tenure	-1081 2	775	-2413 1	044	46 0	956	-1035 1	815	-1023 3	201	122 4	977
Sum_HR_Practices_Compensation	-1098 8	949	1704 2	777	11354 6	133	-5793 4	803	-1469 3	796	-6756 8	794
Sum_HR_Practices_Organization_of_Work	8737 5	401	3425 5	352	-947 2	783	24012 2	053	-2306 5	395	9845 9	515
Average_Workplace_Promotions	28625 9	079	-6967 5	292	-2727 8	581	-5263 1	792	2945 5	600	-17054 9	657
Proportion_Fulltime_HighSkilled_Workers	134.4	998	1204 7	972	385379	345	44118 5	651	4321 3	891	-222173 6	109
Proportion_Unionized_Workforce	63986 9	474	44384 4	124	-67478 8	419	120603 3	398	-26654 0	470	145549 3	429

Table D 1 5 - Determinants of Productivity Summary Longitu	gression Coef	f										
Capital intensive tertiary manufacturing												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	172	N=	146	N=	149	N=	141	N=	139	N=	136
	Coeff	Sia	Coeff	Sig	Coeff	Sig	Coeff	S.a	Coeff	Sig	Coeff	Sig
	В	Sig	В	Sig	В	Sig	В	Sig	B	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training_for_Job	285 1	460	-10 4	938	133 6	198	-259	960	-1114	503	-336 4	519
Percent_Workers_Claiming_Availability_Training_Increased	-96	979	325 8	003	43 1	652	-549 9	244	87	966	-556 6	400
Average_Expenditure_for_Training	-23 8	303	04	975	12.4	273	07	986	171	182	38.1	332
Proportion_Employees_Receiving_Classroom_Training	-363294	410	26509 9	027	7696 1	447	42757 5	318	14103 3	470	-118172 9	079
Proportion_Employees_Receiving_OntheJob_Training	8033 7	789	12555 8	189	-273391	001	-56728 8	110	25600	860	-22710 0	555
Sum_Courses_in_Classroom_Format	1628 4	724	-1860 1	288	-887 3	652	-17417	800	1615 6	410	9152 1	306
Sum_Courses_in_OntheJob_Format	7543 6	162	2377 7	192	-1689 6	285	9218 8	242	-8642 5	000	7971 4	268
Average Days of Sick Paid Leave	2245 5	485	-1774 4	140	639 9	703	-2650 7	717	-450 4	738	-221 4	962
Average Days of Other Paid Leave	1613 0	588	-275 0	632	-847 0	180	-270 2	931	-1395 6	224	734 8	831
Average_Days_of_Unpaid_Leave	-2662 3	404	-2684 3	031	1000 2	180	-1700 2	623	-7792	530	502 9	881
Turnover	-12177 2	858	7748 0	645	7379 3	788	-42393 7	675	-13470 5	582	16186 0	862
Median_Overall_Satisfaction	-53025 2	020	-10374 9	149	3707 9	559	-15152	958	-1595 8	892	-22705 9	510
Median_Compensation_Satisfaction	8152 1	669	894 9	890	3884 5	456	18037 8	542	-7879 5	411	12254 7	656
Total_Number_of_Employees	913	648	102.8	095	14 7	808	576	804	-612	506	26 8	916
Percentage_ExportSales	-79 6	864	-394 5	021	47 5	780	529 9	527	1546	555	-681 2	347
Proportion_Employees_Using_Computers	34626 6	611	-49794 4	068	-57637 4	019	355 9	996	10952.2	751	17071 5	817
Percent_Workers_Having_Young_Kids	-32 4	926	-1180	221	188 8	040	5219	242	3358	055	4113	418
Workplace_Average_Pay	09	169	23	000	09	000	-0 2	865	18	000	01	947
Average_Family_Other_Income	16	098	06	454	-1 0	332	16	188	33	007	27	020
Average_Workforce_Tenure	1349 2	584	-1210 8	170	645 4	350	-3347 5	324	-2663 1	015	80 2	978
Sum_HR_Practices_Compensation	-11788 0	316	-2681 8	485	6763 2	049	1387 0	931	1468 5	750	-834 1	961
Sum_HR_Practices_Organization_of_Work	-41604	522	-5760 1	045	844 1	689	-1212 2	878	-1845 7	521	-3242 9	734
Average_Workplace_Promotions	6814 5	617	6284 7	085	-7752 5	012	203134	248	9931 5	078	26585 5	150
Proportion_Fulltime_HighSkilled_Workers	-33188 3	447	-16223 1	369	13752 6	436	22758 0	629	45871	823	28445 7	641
Proportion_Unionized_Workforce	130759 5	016	-39897 6	237	3681 6	905	118112 5	082	25215 3	507	80189 8	284

Table D 1 6 - Determinants of Productivity Summary Longitudinal (Differential) Regression Coeff												
Construction												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	227	N=	222	N=	217	N=	201	N=	196	N=	178
	Coeff	Sia	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sia	Coeff	Sig
	В	Sig	В	Jig	В	Sig	В	Sig	В	Sig	В	Jug
Percent_Workers_Claiming_Too_Little_Training_for_Job	-98 2	704	-138 0	181	-435 5	004	3114	192	-49 5	600	-322 3	266
Percent_Workers_Claiming_Availability_Training_Increased	-519	833	304 5	001	483 2	001	405 5	056	2196	006	869	678
Average_Expenditure_for_Training	10 8	491	83	193	77	315	77	647	-17	710	-110	462
Proportion_Employees_Receiving_Classroom_Training	-15260 5	434	26425 4	000	11791 9	276	18934 2	338	4087 3	496	12044 3	512
Proportion_Employees_Receiving_OntheJob_Training	-7490 9	542	8049 0	068	-183763	013	-32018 3	083	-13186 9	024	18387 2	337
Sum_Courses_m_Classroom_Format	4426 7	238	-2930 7	048	-5395 8	049	10651 5	003	-2276 1	132	1724 4	673
Sum_Courses_in_OntheJob_Format	-34891	357	-2619 1	118	8848 0	002	2849 0	479	1671 6	220	2075 5	645
Average_Days_of_Sick_Paid_Leave	3967 2	130	-1508 4	001	1101 6	632	4231 0	179	-1305 5	010	7839 6	118
Average_Days_of_Other_Paid_Leave	-2168 0	089	-1647 2	000	-347 9	777	-1753 0	400	1625 6	009	4607 7	149
Average_Days_of_Unpaid_Leave	673 7	615	-2356 8	000	5113	578	-2624 0	045	377 9	479	-2105 5	153
Turnover	-9126 2	770	-32553 2	002	16247 8	537	-25602 2	284	7539 9	337	61090 6	088
Median_Overall_Satisfaction	-251618	079	2517 7	631	6802 3	435	23585 1	097	5126 9	330	11286 7	538
Median_Compensation_Satisfaction	-33813 5	018	-1335 5	777	-3098 2	731	709 5	971	-158877	004	-59723 9	011
Total_Number_of_Employees	-39 4	900	222 2	112	-611 6	066	-244 5	472	-113 2	427	-58 3	828
Percentage_ExportSales	2575 2	070	389 1	614	-1272 6	356	1001 0	661	20 9	984	531 0	730
Proportion_Employees_Using_Computers	-146395 2	013	-107853 8	000	-514169	112	-20492 4	752	800 6	966	-30838 1	481
Percent_Workers_Having_Young_Kids	888	649	-328 4	000	-273 1	091	139 9	541	-308 4	002	299 2	369
Workplace_Average_Pay	11	000	11	000	08	000	16	000	12	000	16	000
Average_Family_Other_Income	27	110	-0 7	427	-4 1	000	4 0	088	09	097	07	374
Average_Workforce_Tenure	6092 5	001	577 9	418	-790 8	395	-5582 1	005	34.4	948	-2407 7	200
Sum_HR_Practices_Compensation	11322 4	070	-1159 2	626	-10444 9	048	-1576 0	832	981 5	754	15901 2	067
Sum_HR_Practices_Organization_of_Work	6356 9	177	-2915 4	093	-4185 9	161	-1017 8	833	-2126 4	236	2355 4	621
Average_Workplace_Promotions	22262 4	004	429 7	875	-5578 8	110	11674 1	112	-5934 2	008	-16336 5	112
Proportion_Fulltime_HighSkilled_Workers	-59901 6	006	-26102 4	018	11114 8	438	-197203	401	-55164	459	-1019 4	969
Proportion_Unionized_Workforce	-3785 1	902	42557 3	006	-551774	036	6616 2	885	-4003 2	825	191	1 000

Table C 1 7 - Determinants of Productivity Summary Longitu	dınal (Dıfferei	itial) Re	gression Coef	f								
Transportation, warehousing, wholesale												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	329	N=	303	N=	338	N=	305	N=	281	N=	285
	Coeff		Coeff	S.c.	Coeff	Sig	Coeff	S.a.	Coeff	S	Coeft	Sia
	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig
Percent Workers_Claiming_Too_Little_Training_for_Job	-692 0	082	21 8	921	331 7	006	-453 6	117	-91 4	712	-1539 4	000
Percent_Workers_Claiming_Availability_Training_Increased	745 8	069	-161 6	307	213 1	024	188 8	505	-572 0	008	1509 0	000
Average_Expenditure_for_Training	25 0	202	22 7	002	-24 1	047	378	011	23 5	003	71 9	001
Proportion_Employees_Receiving_Classroom_Training	384791	220	-218153	163	16238 9	173	136967 7	000	-49922 1	004	24983 1	482
Proportion_Employees_Receiving_OntheJob_Training	19442 8	499	19294 5	169	-143506	143	-43935 9	071	7006 2	618	9725 4	779
Sum_Courses_in_Classroom_Format	-277 2	964	-1477 7	588	1632 7	342	3488 7	447	-4089 9	273	-2444 9	670
Sum_Courses_m_OntheJob_Format	-3973 6	400	-1430 3	582	-3641 9	081	-2438 3	491	-6798 4	044	-3502 1	535
Average Days of Sick Paid Leave	24983 8	000	-1560 7	047	-1442 2	376	10609 8	028	2927 6	259	7860 1	251
Average_Days_of_Other_Paid_Leave	-2131 2	456	-162 9	744	-183 6	405	195 0	824	3458 6	056	-2113 2	020
Average_Days_of_Unpaid_Leave	130 9	908	364 1	448	-660 1	283	7196	794	641 5	167	1135 8	595
Turnover	58359 9	420	13533 5	574	27098 0	275	194468 5	000	59060 0	108	69255 9	487
Median_Overall_Satisfaction	-12741 6	615	616 7	959	7067 4	272	563661	002	-9183 3	491	7872 5	690
Median_Compensation_Satisfaction	-43052 9	071	28807 9	018	218 4	973	14982 5	374	-19596 4	170	-68892 1	001
Total_Number_of_Employees	366 1	481	65 3	826	-224 4	287	-135 8	683	-552 4	029	-178 8	600
Percentage_ExportSales	2315 2	017	166 7	689	697 9	014	-875 9	319	1644 2	000	-2078 0	009
Proportion_Employees_Using_Computers_	10061 0	849	109974	658	13968 3	524	1321 2	975	-6254 7	810	-98087 8	041
Percent_Workers_Having_Young_Kids	-553 0	310	-148 5	484	-546 1	000	-272 4	416	-347 6	268	-732 5	096
Workplace_Average_Pay	11	165	14	000	20	000	33	000	14	000	27	000
Average_Family_Other_Income	23	339	09	214	-2.4	001	-2.2	007	-12	216	-1 2	222
Average_Workforce_Tenure	-1095 9	679	1085 6	250	-213 4	746	5638 0	006	2184 0	091	-790 0	749
Sum_HR_Practices_Compensation	-6635 4	620	-3192 1	576	-1006 8	816	10414 3	230	-5821 6	187	12464 3	252
Sum_HR_Practices_Organization_of_Work	-4918 1	573	5253 5	320	-3841 8	220	-11133 1	103	-8645 7	084	3045 5	718
Average_Workplace_Promotions	-10071 7	550	-2533 2	596	-11132 3	000	-5426 8	589	4487 8	501	1023 0	923
Proportion_Fulltime_HighSkilled_Workers	66195 3	258	-9353 4	720	-54728 5	002	-102273 1	004	-1044 9	972	-52885 7	250
Proportion_Unionized_Workforce	-84294 1	243	102088 2	151	85113 1	089	-50708 5	356	217101 7	000	-79456 7	244

Table D 1 8 - Determinants of Productivity Summary Longitu	dinal (Differe	ntial) Re	gression Coef	ff								
Communication and other utilities												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	89	N=	86	N=	87	N=	69	N=	74	N≈	62
	Coeff	S.a.	Coeff	6.0	Coeff	6.0	Coeff	S.a.	Coeff	Sig	Coeff	Sia
	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training_for_Job	-753 8	558	362 7	190	-336 2	058	849 4	504	501 7	093	-249 9	852
Percent_Workers_Claiming_Availability_Training_Increased	-332 0	780	251	902	-36 1	819	-820 5	617	-477 0	123	-657 5	774
Average Expenditure for Training	23	924	32	667	-17	878	-4 6	924	209	088	-470	420
Proportion Employees Receiving Classroom Training	-58998 9	634	44309 7	115	-25181 5	213	910993	729	-56301 0	017	134257 0	484
Proportion Employees Receiving Onthe Job Training	16812 8	870	-10013 6	605	5812 1	793	35157 5	835	115367 0	000	286282 2	212
Sum_Courses_m_Classroom_Format	-12320 9	397	-4438 4	136	-744 1	795	-5928 0	798	8420 2	026	-22833 1	273
Sum_Courses_in_OntheJob_Format	9465 7	483	2665 7	458	5935 8	101	29145 1	301	-11395 4	005	-32599 8	247
Average_Days_of_Sick_Paid_Leave	12888 9	089	126 1	947	2705 1	080	-2827 8	763	-4100 0	034	-8882 3	340
Average_Days_of_Other_Paid_Leave	1880 4	711	-545 3	443	696 9	454	-1439 7	831	-265 8	794	3883 0	736
Average_Days_of_Unpaid_Leave	1479 2	728	347 6	780	-2239 4	382	2116 2	846	-3490 2	354	14268 1	262
Turnover	6065 6	975	64503 6	284	14658 8	694	413508 5	446	-28419 7	623	4513 0	986
Median_Overall_Satisfaction	17951 5	729	10478 9	470	-108319	291	219	1 000	-12939 5	419	881542	547
Median_Compensation_Satisfaction	-191 8	997	-3645 6	856	-8278 9	458	-17263 8	770	34464 7	208	-1981183	188
Total_Number_of_Employees	143 9	742	186 0	461	-805 1	016	405 3	554	144 1	545	218	979
Percentage_ExportSales	-1703 3	433	-97 3	861	-341 3	435	-1671 4	730	2163 7	005	-1028 0	771
Proportion_Employees_Using_Computers	15642 1	893	-158703	734	-49720 0	067	91959 1	621	-123630 0	010	-170024 4	322
Percent_Workers_Having_Young_Kids	535 5	668	151 2	600	-43 8	869	676 2	667	397 7	147	4067 0	153
Workplace_Average_Pay	14	640	18	029	20	001	42	291	38	000	48	133
Average_Family_Other_Income	-5 5	430	05	734	-3 2	001	40	821	-0.8	522	4 5	693
Average_Workforce_Tenure	-4964 8	526	1804 1	297	3462 7	002	-12709 9	260	-3919 3	039	4616 7	730
Sum_HR_Practices_Compensation	-6594 3	821	-155656	093	1421 8	830	-383101	540	31950 5	002	17939 5	744
Sum_HR_Practices_Organization_of_Work	-11278 4	561	-1835 2	672	-410 5	896	12992 7	771	-2898 7	636	50192 7	350
Average_Workplace_Promotions	13425 2	727	5874 3	432	-2726 5	632	-1252 4	948	-358 6	960	10211 5	710
Proportion_Fulltime_HighSkilled_Workers	-81988 4	533	-364567	191	-23754 7	441	8104 7	954	434 5	992	-114501	949
Proportion_Unionized_Workforce	82613 5	631	-5340 3	932	109724 6	177	79413 7	775	47686 0	446	216887 2	387

Table D 1 9 - Determinants of Productivity Summary Longitudinal (Differential)Regression Coeff												
Retail trade and consumer services												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	195	N=	179	N=	230	N=	165	N=	180	N=	167
	Coeff	S10	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff	S.a	Coeff	Sig
	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig	В	Joig
Percent_Workers_Claiming_Too_Little_Training_for_Job	-670 8	018	100 6	557	270 1	001	-334 0	429	-482 6	016	610 0	146
Percent_Workers_Claiming_Availability_Training_Increased	-28 7	913	93	955	-102 4	184	-821 8	003	-371 0	060	-856 3	008
Average_Expenditure_for_Training	04	989	12 0	475	-4 0	545	23 3	538	40 0	022	43 3	226
Proportion_Employees_Receiving_Classroom_Training	-7115 6	803	-1091 7	930	-14166	803	-18475 0	424	-10112 7	504	-67065 0	028
Proportion_Employees_Receiving_OntheJob_Training	10546 5	415	-128204	128	-9366 2	075	9108 0	704	-789 3	935	11751 4	685
Sum_Courses_in_Classroom_Format	8938 3	023	-2467 1	292	12 1	991	7717 7	067	284 3	915	4220 2	330
Sum_Courses_in_OntheJob_Format	-55361	084	2814 3	250	1366 0	183	-52114	223	-3918 5	074	2781 7	492
Average_Days_of_Sick_Paid_Leave	-167 5	950	46 1	972	679 1	306	4321 9	146	1385 4	566	-1524 6	670
Average Days of Other Paid Leave	-179 1	893	659 4	599	-283 3	575	-2559 1	340	-194 1	837	-2606 9	335
Average Days of Unpaid Leave	-1667 5	020	-400 2	565	229 2	526	263	979	-1877 0	058	-802 2	466
Turnover	10106 8	720	4753 3	686	-8139 7	339	22218 2	486	20178 3	231	52757 6	246
Median_Overall_Satisfaction	-41634 6	002	-7494 5	542	-3507 4	342	-25634 8	198	23942 6	024	-1292 6	956
Median_Compensation_Satisfaction	4540 4	771	-5664 6	452	7645 7	033	31579 2	066	-14151 4	118	7843 8	722
Total_Number_of_Employees	-235 0	640	-211 1	280	-49 2	665	-355 6	378	-174 0	371	-82 3	812
Percentage_ExportSales	84 8	920	-556 5	547	123 6	649	825 5	133	-499 2	480	387 6	567
Proportion_Employees_Using_Computers	60792 7	026	10851 2	482	19615 7	024	15955 6	595	38301 0	026	39298 9	247
Percent_Workers_Having_Young_Kids	-29 7	923	-48 0	818	-104 5	287	356 8	439	-301 0	241	-14 2	974
Workplace_Average_Pay	01	947	15	083	06	105	-18	127	-0 5	486	-20	104
Average Family Other Income	-1 3	259	-09	354	01	829	-14	223	-0 2	736	-2.4	033
Average_Workforce_Tenure	2002 8	297	-1296 2	211	-702 0	157	-70 6	975	-688 4	527	-643 7	739
Sum_HR_Practices_Compensation	-8095 5	250	-9608 6	033	-54170	013	-15562 0	093	-524 8	912	-7691 5	444
Sum_HR_Practices_Organization_of_Work	-13719	794	-304 6	925	-629 2	626	-9304 9	100	-7734 5	056	-13652 5	015
Average_Workplace_Promotions	5538 2	558	9055 1	035	8057 2	008	34976 4	024	2172 1	691	42736 5	006
Proportion_Fulltime_HighSkilled_Workers	30685 4	439	15360 4	432	10506 0	331	90026 6	058	2869 3	888	35992 7	279
Proportion_Unionized_Workforce	12362 8	733	-57624 7	072	9561 7	503	-3372 7	933	-26627 9	266	3864	992
Table C 1 10 - Determinants of Productivity Summary Longit												
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Finance and insurance												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	210	N=	188	N=	207	N=	177	N=	189	N=	185
	Coeff	Sug	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sia	Coeff	Sig
	В		В	Joig	B	Sig	В	Sig	В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training_for_Job	250 0	565	-24 0	883	-194 4	347	237 3	723	5713	064	297 5	568
Percent_Workers_Claiming_Availability_Training_Increased	-130 8	762	7193	000	-4 8	978	95	985	234 5	264	-353 6	400
Average_Expenditure_for_Training	-113	549	18	832	-10 7	253	-68	691	-18	873	319	112
Proportion_Employees_Receiving_Classroom_Training	51947 0	188	-5706 2	724	-40929 5	011	63151	869	311360	083	5970 7	870
Proportion_Employees_Receiving_OntheJob_Training	-2225 9	954	-9476 9	418	11950 7	258	-50684 8	130	8629 9	612	535354	068
Sum_Courses_in_Classroom_Format	2273 1	640	-1563 8	466	1993 2	303	-3232 8	585	-4460 0	051	-11614 4	024
Sum_Courses_in_OntheJob_Format	-5420 8	322	1764	930	-15511	510	63 4	990	-320 9	901	510 1	893
Average Days of Sick Paid Leave	1090 1	742	2322 1	106	-46 2	968	3434 7	489	4583 5	000	3336 5	255
Average_Days_of_Other_Paid_Leave	1935 0	334	-662 6	282	-2015 8	003	-2835 5	197	-725 0	429	1176	954
Average_Days_of_Unpaid_Leave	-9704	770	2563 8	138	-3807 5	023	-6258 4	120	2054 4	353	1029 1	715
Turnover	-73587 4	468	-40813 2	205	-1389514	008	-46787 1	724	-19829 9	659	-196988 6	195
Median_Overall_Satisfaction	4019 6	905	5584 4	654	4284 9	663	-85376 2	027	141410	232	-1334 1	966
Median_Compensation_Satisfaction	-8089 1	814	-36421 1	011	-357219	004	44970 0	122	1933 1	889	10595 9	729
Total_Number_of_Employees	650 3	114	-45 2	817	-3104	125	-207 2	428	-1578	464	-269 6	234
Percentage_ExportSales	-2227	877	-1495 5	145	6169	191	233 4	871	734.4	397	-1126 8	383
Proportion_Employees_Using_Computers	-20308 5	700	59642 0	230	86488 2	006	2246 7	981	-47874 9	321	102314 4	192
Percent_Workers_Having_Young_Kids	-544 5	380	-231 3	314	-361 3	132	1003 0	127	-283 3	409	72.4	908
Workplace_Average_Pay	30	004	18	000	16	000	05	557	19	000	10	292
Average_Family_Other_Income	31	413	-06	340	06	212	46	027	01	890	70	028
Average_Workforce_Tenure	708 1	790	-2783 8	007	-2199 5	034	3611 4	331	-1839 9	180	-2413 9	425
Sum_HR_Practices_Compensation	8505 0	445	-3190 5	542	4896 8	229	397 0	976	13527 9	012	13352 5	212
Sum_HR_Practices_Organization_of_Work	4647 2	550	5866 1	078	-39 2	987	-8019 3	318	21571	567	-11620 1	162
Average_Workplace_Promotions	-8633 8	356	-4474 9	236	2511	944	-6139 6	606	-73151	201	8438 8	526
Proportion_Fulltime_HighSkilled_Workers	-27565 0	612	-38989 2	023	7768 6	675	-28130 2	532	-9670 9	714	57095 3	357
Proportion Unionized Workforce	-3485 5	939	6376 1	779	-46023 0	016	-1109 8	987	-49829 7	038	-98082 6	086

Table D I 11 - Determinants of Productivity SummaryLongitudinal (Differential) Regression Coeff												
Real estate, rental and leasing operations												
	_	2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	82	N=	75	N=	76	N=	73	N=	72	N=	70
	Coeff	Sig	Coeff	Sia	Coeff	Sia	Coeff	Sig	Coeff	Sia	Coeff	Sig
	В		В	Sig	В	Sig	В	Sig	В	Jig	В	Jig
Percent_Workers_Claiming_Too_Little_Training_for_Job	-908 7	249	-234 4	541	270 4	374	-225 8	837	-44 8	886	-1170 2	268
Percent_Workers_Claiming_Availability_Training_Increased	230 0	819	-59 7	854	-364 0	178	-1944 7	065	-165 2	594	820 2	345
Average_Expenditure_for_Training	-12 3	439	-22 2	604	212	408	-4 1	786	70	801	-180	793
Proportion_Employees_Receiving_Classroom_Training	48068 8	370	-21860 1	707	-123206 9	000	-5610 9	940	555133	111	131160 2	181
Proportion_Employees_Receiving_OntheJob_Training	30752 7	699	-27984 8	495	-22453 7	415	75735 7	311	-12006 6	645	-80258 2	236
Sum_Courses_in_Classroom_Format	11486 7	299	10598 3	032	6318 4	157	2587 6	852	-2390 4	615	-29791 1	020
Sum_Courses_in_OntheJob_Format	-3857 6	763	-3973 2	447	2676 1	560	-2445 5	861	-104 9	978	12914 5	295
Average_Days_of_Sick_Paid_Leave	-6506 2	595	-4964 0	278	-799 0	611	-3923 2	712	1241 0	729	-22795 1	005
Average_Days_of_Other_Paid_Leave	18995 9	144	-1779 2	750	-257 5	953	1865 2	922	106 1	985	21798 7	176
Average_Days_of_Unpaid_Leave	-1672 3	694	3975 3	334	6465 8	044	-362 1	905	2210 2	483	-1721 7	633
Turnover	94054 9	604	-30972 4	508	29524 1	568	77585 2	663	-11708 6	709	246281 3	072
Median_Overall_Satisfaction	-46855 3	441	-33959 9	119	19506 7	171	12453 0	835	31144 7	044	-47703 5	319
Median_Compensation_Satisfaction	-62506 8	208	-19694 0	304	10690 4	505	-61691 9	522	-5196 3	789	10998 6	843
Total_Number_of_Employees	-37 2	917	-85 3	820	322 8	308	-113 0	674	-132 8	676	384 4	127
Percentage_ExportSales	6737 8	018	-7554	548	-1128 1	422	1432 9	547	-292 0	756	-31591	062
Proportion_Employees_Using_Computers	120320 0	490	-78160 8	076	60634 0	184	8616 5	941	14467 4	735	482345 6	000
Percent_Workers_Having_Young_Kids	-3809 6	008	-1068 4	002	59 8	831	-439 3	763	-43 1	910	577 9	628
Workplace_Average_Pay	00	997	05	386	10	053	13	502	06	135	10	405
Average Family_Other_Income	-0 8	896	0.0	999	-0 5	694	-32	564	-13	147	-10	784
Average_Workforce_Tenure	10818 9	088	-620 9	790	612 8	760	-1359 7	877	1891 1	377	16834 2	006
Sum_HR_Practices_Compensation	173719	606	3686 7	680	-6852 7	478	-34218 5	147	-10565 5	202	-9052 8	607
Sum_HR_Practices_Organization_of_Work	28955 2	156	8083 4	355	-10500 2	056	16043 0	421	-8667 6	138	-35577 5	001
Average_Workplace_Promotions	-25072 9	376	20903 8	111	5770 8	600	4794 9	899	-1776 8	819	-19269 4	341
Proportion_Fulltime_HighSkilled_Workers	79084 9	569	292351	641	58212.6	048	70252 7	705	-24267 1	550	113828 9	349
Proportion_Unionized_Workforce	-54716 8	750	5096 0	959	1551 0	979	907864	698	-212537 3	012	1886 2	992

Table D 1 12 - Determinants of Productivity Summary Longitudinal (Differential) Regression Coeff												
Business services												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	167	N=	156	N=	194	N=	145	N=	152	N=	149
	Coeff	Sia	Coeff	Sig	Coeff	510	Coeff	Sig	Coeff	Sia	Coeff	Sig
	В	Sig	В	Joig	В	Sig	В	Sig	В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training_for_Job	414 0	725	-657 2	019	-359 1	632	-1337 0	447	-2632 3	030	552 7	731
Percent_Workers_Claiming_Availability_Training_Increased	443 7	661	24 7	935	-265 8	585	-19 2	987	-208 9	839	-772 9	634
Average_Expenditure_for_Training	-73 0	233	-33 2	272	-73 1	191	-98 7	387	21 5	749	-129 2	144
Proportion_Employees_Receiving_Classroom_Training	-64580 0	426	-7659 3	847	33050 8	652	-563164	654	-45302 1	695	6034 7	960
Proportion_Employees_Receiving_OntheJob_Training	139994 1	119	-20494 2	525	-59412 9	367	1475890	258	-815743	323	35191 8	759
Sum_Courses_in_Classroom_Format	45592 3	000	-26 8	997	4142 8	715	27440 4	140	-281996	152	15339 8	424
Sum_Courses_in_OntheJob_Format	-26418 7	076	2589 9	610	3327 7	718	-38959 7	048	210663	143	-16085 6	406
Average Days_of_Sick_Paid_Leave	265 3	983	-2317 4	574	-8425 2	422	-9526 2	668	18083 1	111	14413 4	611
Average Days_of Other Paid_Leave	5426 8	646	1513 4	685	-2368 8	420	-4742 3	788	-14792 6	288	-15687 3	271
Average_Days_of_Unpaid_Leave	-35141	581	-2410 9	484	-1604 4	793	-9537 9	146	-3061 3	825	1288 8	871
Turnover	-95633 6	510	39060 9	374	27992 6	828	-119341 4	565	205530 8	248	-29339 3	892
Median_Overall_Satisfaction	-37258 1	575	-2094 4	915	2409 0	954	-1655 7	983	141706 1	111	-16303 3	867
Median_Compensation_Satisfaction	16619 6	804	-6579 6	799	1070 1	974	66797 1	345	-72703 0	316	84376 5	335
Total_Number_of_Employees	32 7	944	130 1	489	-450 5	381	177 0	736	-18 5	958	129 7	731
Percentage_ExportSales	-1752 8	328	1560 2	011	-298 5	807	52514	031	-965 3	467	617 2	855
Proportion Employees Using Computers	-693102	592	42568 7	371	40763 2	675	137252 2	412	340475 2	055	374944 8	088
Percent_Workers_Having_Young_Kids	1302 6	407	186 3	760	83 8	901	-942 0	601	-50 1	960	-1799 9	296
Workplace_Average_Pay	34	030	15	039	26	137	36	178	73	001	61	000
Average_Family_Other_Income	-04	939	-0.8	572	-21	402	-15 0	271	18	675	55	436
Average_Workforce_Tenure	-2913 3	758	1035 4	723	-2491 9	629	12742 8	205	140563	142	1257 3	886
Sum_HR_Practices_Compensation	-24812 3	406	10720 1	303	6111 5	747	2766 0	950	30008 5	441	-18561 9	703
Sum_HR_Practices_Organization_of_Work	-255153	274	857 2	928	-13907 3	344	-5049 6	843	5797 3	841	-17020 7	602
Average_Workplace_Promotions	10870 5	802	-9065 5	434	11778 9	451	-41941 8	372	-29500 5	553	-57843 0	163
Proportion_Fulltime_HighSkilled_Workers	-342985 4	012	-1228 3	979	-114658 8	337	-182557 3	331	70787 9	748	-142483 6	459
Proportion_Unionized_Workforce	194215 0	299	-46639 5	770	811699	633	103945 9	639	234341 1	365	4839304	047

Table D 1 13 - Determinants of Productivity Summary Longitudinal (Differential) Regression Coeff												
Education and health services												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	18	N=	25	N=	35	N=	25	N=	22	N=	25
	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig
	В] sig	В	B	В	Sig	В	Sig	В		В	
Percent_Workers_Claiming_Too_Little_Training_for_Job	N/A		5167	291	55 0	738	-2570 7	204	N/A		N/A	
Percent_Workers_Claiming_Availability_Training_Increased	N/A		807 0	258	-1817	149	-1049 4	239	N/A		N/A	
Average_Expenditure_for_Training	N/A		-13	896	108	266	-20 4	505	N/A		N/A	
Proportion_Employees_Receiving_Classroom_Training	N/A		46941 2	309	-5794 9	670	96755 8	243	N/A		N/A	
Proportion_Employees_Receiving_OntheJob_Training	N/A		12792 3	441	34667 4	048	-126543 7	198	N/A		N/A	
Sum_Courses_in_Classroom_Format	N/A		7061 0	404	845 0	664	5297 1	363	N/A		N/A	
Sum_Courses_in_OntheJob_Format	N/A		-11550 9	377	-1279 3	624	7636 4	323	N/A		N/A	
Average Days of Sick Paid Leave	N/A		992 3	663	15364	172	-8420 8	259	N/A		N/A	
Average Days of Other Paid Leave	N/A		5453 2	249	-1487 6	086	2037 4	310	N/A		N/A	
Average Days_of_Unpaid_Leave	N/A		-1629 2	361	-23567	056	12023 8	286	N/A		N/A	
Turnover	N/A		-191760 2	390	-17667 8	609	365972.2	203	N/A		N/A	
Median_Overall_Satisfaction	N/A		555571	306	-13165 7	037	91793 6	239	N/A		N/A	
Median_Compensation_Satisfaction	N/A		-21905 9	519	9009 0	276	-955962	236	N/A		N/A	
Total Number of Employees	N/A		444 5	401	1187	273	109 8	294	N/A		N/A	
Percentage_ExportSales	N/A								N/A		N/A	
Proportion_Employees_Using_Computers	N/A		-461866 0	300	94228 6	010	-1585570	233	N/A		N/A	
Percent_Workers_Having_Young_Kids	N/A		381 3	612	312.8	035	-641 8	264	N/A		N/A	
Workplace_Average_Pay	N/A		-53	420	17	006	16	390	N/A		N/A	
Average_Family_Other_Income	N/A		31	396	23	066	31	264	N/A		N/A	
Average_Workforce_Tenure	N/A		-6054 9	274	-10014	310	-133292	192	N/A		N/A	
Sum_HR_Practices_Compensation	N/A		25643 8	427	-9430 8	074	-119474	320	N/A		N/A	
Sum_HR_Practices_Organization_of_Work	N/A		-151164	206	1975 9	439	-252678	234	N/A		N/A	
Average_Workplace_Promotions	N/A		-503 3	964	6704 8	297	-4840 0	605	N/A		N/A	
Proportion_Fulltime_HighSkilled_Workers	N/A		-69844 4	337	2032 3	869	-428429	274	N/A		N/A	
Proportion_Unionized_Workforce	N/A		55701 0	296	-53123 7	474	-3923 3	933	N/A		N/A	

Table D 1 14 - Determinants of Productivity Summary Longitudinal (Differential) Regression Coeff												
Information and cultural industries												
		2001		2003		2005		2003		2005		2005
		1999		2001		2003		1999		2001		1999
	N=	120	N=	94	N=	101	N=	97	N=	89	N=	90
	Coeff	0	Coeff	C	Coeff	C	Coeff	C	Coeff	C	Coeff	S.c.
	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig	В	Sig
Percent_Workers_Claiming_Too_Little_Training_for_Job	-176 6	283	-504 2	020	292 7	186	-125 9	621	-148 1	557	-1586	485
Percent_Workers_Claiming_Availability_Training_Increased	47 1	800	-76 1	695	-237 2	285	28 7	923	-84 1	644	-438 1	098
Average_Expenditure_for_Training	13	902	13 0	527	-41 7	098	-10 3	617	25	859	-193	250
Proportion_Employees_Receiving_Classroom_Training	1932 9	912	95722 9	033	-7596 2	767	-20258 5	398	7058 5	743	-583199	044
Proportion_Employees_Receiving_OntheJob_Training	-2079 9	887	-27792 3	232	13278 0	592	19055 2	429	22608 0	373	29296 1	167
Sum_Courses_in_Classroom_Format	-2376 0	364	-4758 6	171	17165 9	000	8058 1	038	869 5	740	97714	009
Sum_Courses_in_OntheJob_Format	-14180	515	5049 6	137	-11997 2	001	-7984 8	026	-3633 2	152	-9960 2	001
Average_Days_of_Sick_Paid_Leave	4096 3	038	2730 8	087	-1482 3	531	-572.9	816	1071 2	720	866 8	765
Average_Days_of_Other_Paid_Leave	-1551 1	189	549 8	702	898 5	671	-1649 9	184	1487 7	552	372 7	822
Average_Days_of_Unpaid_Leave	1194 4	334	347 2	752	-369 4	516	896 0	800	-1825 5	057	560 4	683
Turnover	-17329 2	502	-32854 6	404	-20856 9	491	-16053 1	700	-47759 5	119	-84044 7	169
Median_Overall_Satisfaction	1108 0	916	-5787 6	643	13700 9	179	-30793 4	054	-3262 0	815	-5201 3	695
Median Compensation Satisfaction	-13087 9	234	-5434 3	632	7158 3	575	15735 6	328	-232173	131	64114	616
Total Number_of Employees	-323 0	021	220 1	246	-424 9	025	-245 3	037	-50 9	664	-215 3	027
Percentage_ExportSales	-604 6	052	341 1	367	939 6	081	1022 6	036	309 1	228	-216 7	709
Proportion_Employees_Using_Computers	-1060 2	960	-257256	624	-5014 0	877	105178	765	-269901	344	-10740 2	745
Percent_Workers_Having_Young_Kids	94 1	669	-83 7	799	55 5	829	-185 8	644	-125 0	650	14 8	954
Workplace Average Pay	01	851	-12	044	-06	266	05	304	07	047	17	000
Average_Family_Other_Income	-2 4	033	-11	350	16	177	-11	319	06	656	36	025
Average Workforce Tenure	-3304 7	027	1146 8	538	177 4	872	-1374 8	506	-1022 4	528	-2405 5	133
Sum_HR_Practices_Compensation	4312 2	420	-9813 2	247	15949 6	007	-3851 7	553	31001	642	3730 7	568
Sum HR Practices Organization of Work	6489 0	037	1080 6	835	-10126 9	071	-6372 6	270	1237 3	740	-1763 1	696
Average_Workplace_Promotions	10001 5	114	-3153 9	725	-4658 2	208	55197	517	47303	414	15929 6	008
Proportion_Fulltime_HighSkilled_Workers	27062 2	147	32035 6	430	16066 7	505	74791 8	079	-23130 6	297	4434 7	904
Proportion_Unionized_Workforce	39190 5	044	-131579 1	014	36174 2	504	14401 5	642	-96916 5	066	49423 7	353