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Control and Return Rights in the Knowledge Economy: Is Sharing the Rights of Ownership with Employees Efficient?

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CONTROL AND RETURN RIGHTS IN THE KNOWLEDGE ECONOMY: IS SHARING THE RIGHTS OF OWNERSHIP WITH EMPLOYEES EFFICIENT?

ABSTRACT

In the following paper, we examine the impact of sharing the rights of ownership with employees. Using a dataset of over 2,100 British Establishments we examine the impact of sharing control and return rights on four measures of firm performance. We find evidence that the sharing of control and return rights with employees is associated with superior performance outcomes.

In the last twenty years, there has been a radical shift in how firms drive value (Lev, 2001; Pfeffer, 1998). Product market competition, globalization, technological change and changes in the skill-level of the workforce have resulted in changes in the nature of the employment relationship (Capelli, 1999). Human capital is recognized as a key driver of success in the new economy (Pfeffer, 1994; 1998) and there is a substantial body of empirical literature that supports this (Arthur, 1994; Becker and Huselid, 1998; Datta, Guthrie and Wight, 2005; Guthrie, 2001; Huselid, 1995; Huselid, Jackson and Schuler, 1997; Ichniowski, 1990; Ichniowki, Shaw and Pennurchi, 1997).

Traditionally, incentive contract theory holds residual control and residual return are most efficient when they are assigned to executives. Without access to residual returns and control, it is argued, management will not have the incentive necessary to closely monitor the workforce (Alcain and Demetz, 1972). Recently, there has been speculation that in the knowledge economy, the most efficient residual claimants may be non-executive employees who are in closer contact with customers, the product produced or responsible for developing new products (Ben-Ner and Jones, 1995; Rousseau and Shperling, 2003; Sesil, 2000). The theoretical work of Ben-Ner and Jones (1995), Pierce, Kostove, Dirks (2001), Pierce, Rubenfeld, and Morgan (1991), and Rousseau and Shperling (2003) all suggest that the sharing of these ownership rights with employees may be an efficient incentive contract.

We are seeing evidence that the sharing of control and return rights with employees is occurring. Many firms have adopted employee involvement programs and decentralized management systems (Doucouliagos 1995; Osterman, 1995; 2000; Pfeffer and Baron, 1988) and many firms are increasingly sharing residual returns in the form of profit-sharing and equity compensation such as stock options with employees at lower levels in the organization (Brown,

Fakhfakh and Sessions, 1999; Core and Guay, 2001; Kruse, 1993; Oyer and Schaefer, 2004; Sesil, Kruse and Blasi, 2003). Given these considerable changes in the internal and external environment (Jackson and Schuler, 1995) and the advent of the knowledge economy, Alcain's and Demetz's (1972) assertion that executives should be the primary residual claimants may now be the exception, rather than the rule. In the following paper, we test to determine if the sharing the rights of ownership with employees is efficient in establishments across a major knowledge-based western economy.

The British Context. The United Kingdom (U.K.) is a knowledge-based economy with an emphasis on industries in which the growth of intangible capital is a key objective. The market to book ratio in the U.K. over the last twenty years, a key metric used to assess the value of intangible capital across the economy, has seen a substantial increase across the economy (Lau, 2003). This recognizes that much of the value of the firm is derived from "non-tangible" assets. The U.K. is the 4th largest economy, as measured by gross national product (GNP), behind the U.S., Japan and Germany (The Economist, 2004). Services contribute 71% to the GNP, industry 28% and agriculture 1%. The service sector employs 74% of the workforce, industry 25% and agriculture the remaining 1%.

The U.K. is second to only the U.S. in terms of the number of Nobel prize winners in: Peace, Economics, Medicine, Physics and Chemistry and third behind France and the U.S. for Literature. The U.K. is also a leader in human capital development through investments in training and education. The U.K. is number 11 in terms of the percentage of the population in relevant age group that are pursing a post secondary degree (58%). The U.K. is ranked number 14 in the "innovation index" which is comprised of a combination of human resource skills,

market incentives structures (e.g. tax incentives for investments in R & D) and cooperation between business and research institutions. The U.K. is ranked number 13 in information and communications technology and has the 3rd largest market capitalization at approximately 2.2 trillion dollars behind the U.S. and Japan (Economist, 2004).

In recent years, industrial relations and human resource management in the U.K. have been characterized by an emphasis on establishing partnerships between employees and management. The Labor government has supported these initiatives with the passage of the Employment Relations Act in 1999 (DTI, 1998) and the establishment of the Partnership Fund. Unemployment averaged 6.6% between 1995 and 2001 with 31 million of the 59.5 million populations participating in the workforce. Approximately 30% of the workforce is unionized, down from approximately 60% in the late 1970s and early 1980s. The contribution of human capital to the success of firms is increasingly being recognized. A major London law firm recently started publishing a "Human Capital" report which provides great detail on how people add value to their organization (Financial Times, Apr. 7, 2005). The Institute of Personnel Development (IPD) is at the forefront of efforts to promote the impact of the human resource function in Britain.

THEORETICAL AND EMPIRICAL OVERVIEW

Sharing Ownership Rights as an Incentive Contract. In part, principal-agent theory addresses the incentive effects of ownership (Jensen and Meckling, 1976). Principal-agent theory states that in order to develop an asset, owners need to delegate some of their decision-making rights and claims to part of the residual profits to agents (or managers). Principal-agent

theory recognizes that the interests of owners and non-owners are not necessarily the same. The principal needs to incur costs in order to align the interests of the agent with that of the principal. The costs associated with developing these incentive schemes are agency costs. These costs include developing incentive programs that create an incentive for agents to use their knowledge to benefit the owner's interests (Sesil, Kroumova, Blasi and Kruse, 2002).

There are an infinite number of different forms and types of incentive contracts which employers can choose from and some have more efficient outcomes then others comprised of both explicit and implicit components (Marsden, 2003). One of the primary reasons these incentive contracts are necessary is because employees have access to productivity-enhancing information. These questions of how to most effectively monitor and motivate employees are especially pertinent now because of the greater levels of private information, which reside with employees (Coff and Rousseau, 2000). It has long been recognized that information asymmetries exist in organisations and employees have private information from which management could benefit (Kroumova and Sesil, 2005; Sesil et.al., 2002). This is especially the case in "knowledge intensive" firms and economies. Given the increasing educational attainment, more company training and information technology; it may be especially advantageous for firms to gain access to this information though the use of employee involvement programs and opportunities for information sharing (Sesil, 2000).

According to Milgrom and Roberts (1992) the concept of ownership, combined with statutory property rights, are the fundamental means to provide an incentive to create and develop an asset. The two fundamental aspects of ownership include: firstly, the rights of residual control, which is the right to make decisions concerning the use of an asset; secondly, the right to residual returns, which is the right to revenues left over after all obligations have

been met. It is the combination of these two rights which provides the individual incentive effects associated with ownership Milgrom and Roberts (1992), Hart (1995), Williamson(1996). The combination is seen to be the most powerful incentive due to the fact that the person making the decision bears the financial results of their decision.

Milgrom and Roberts (1992) also state that these effects are most efficient when these property rights are transferable, or are able to be assigned to the person who is best suited to be in charge. Further developing the notion of sharing the rights of ownership are Ben-Ner and Jones (1995). Ben-Ner and Jones develop a theoretical framework, which combines these two aspects of ownership, control and return, and suggest possible firm performance outcomes associated with transferring these rights from owners to non-owner employees. They contend that the greatest efficiency outcomes exist when *both* these rights are transferred from owners to non-owners. This is further supported in the work of Rousseau and Sperling (2003) who argue psychological contracting associated with sharing ownership rights is associated with provide a stronger – alignment between managers and employees.

Shared Control Rights – Information Sharing, Teams and Autonomous Work Practices. There is clearly a trend towards greater decentralization (Pfeffer and Baron, 1988). Employers are increasingly attempting to access potentially productivity-enhancing information which resides with employees (Sesil, et.al., 2002) There has been a broad variety of different employee participation and involvement programmes put in place by employers primarily to obtain this information. The intent of quality circles, information-sharing meetings, teams, employee involvement and participation programmes has, at least partially, been to access the information, which exists with employees (Wagner, 1994). Two practices in particular which attempt to gain

access to the information to which employees have access to are the decentralization of decisions and mechanisms such as meetings or information-sharing sessions, designed to either convey information about the state of the business or to access useful information which employees may possess (Sesil, 2000). There has recently been a focus on pushing decisions down to lower levels in the organisation (Levine, 1995). These efforts are associated with the belief that there are decisions and tasks which employees are in a better position to make than those further up in the organisation (Levine and Tyson, 1990).

There are a number of reasons why we would expect an impact on performance associated with the use of employee involvement programs (Case, 1995). In terms of a potential impact on performance this may in part be due to the knowledge that the employees are working in a direction, which is aligned with business success (Ferrante and Rousseau, 2001). This is partially due to an expectancy theory view that provides evidence that sharing financial information with employees will result in employee effort aligned with the overall strategic objective of the establishments (Ferrante and Rousseau, 2001). Sharing of information with employees also instills trust in employees – when combined with equity compensation that can motive employees to work harder. The establishment of trust between employees and management also can keep employees tied to the firm, resulting in lower employee turnover, ultimately resulting in greater productivity associated with tying difficult to imitate human capital to the firm. There is considerable speculation that it is the combination that provides the incentive effect (Pierce and Furo, 1990; Rosen and Quarrey, 1987).

In both economic and psychological theory there is support for the use of employee involvement, especially in situations of asymmetric or private information – knowledge intensive firms or economies. Psychological theory describes another mechanism associated with the

productivity effects of participation; the impact of participation and involvement on individual motivation and, correspondingly, on individual effort. In so far as work satisfaction has a positive impact on effort, greater satisfaction may translate into greater productivity (Miller and Monge, 1986). A further reason why it is thought that employee involvement has an impact on establishment performance is that there are organisational structural changes, which occur in a participatory environment, which promote cost savings to the establishment. Participation is thought to promote mutual monitoring (Bradley and Gelb, 1981), which may result in reduced direct costs associated with less need for supervisors to act as monitors.

However, traditional incentive contract theory suggests using a high degree of employee involvement without any incentives may promote suboptimal outcomes. In situations where employees have a high degree of control over their work or involvement in, for example, how their work is carried out, without incentives, there is the opportunity for moral hazard. Moral hazard or self-interested misbehaviour is the potential to shirk duties or responsibilities in so far as monitoring will allow (Milgrom and Roberts, 1992). In a situation where employees have either control over the job task or are highly involved in the work process, they may be in a position where they can reduce effort, thus not achieving optimal performance.

While some of the empirical evidence is mixed in relation to the performance effects of employee involvement, the majority of the evidence shows there is a positive association between employee involvement and company performance. Berman and Berman (1989) found there was a significant negative relationship between employee involvement and their measure of productivity. Levine and Tyson (1990) found there to be mixed effects associated with employee involvement, largely dependent on the form of employee involvement used. They found participation to be more effective in settings where incentives were included, and the type

of participation was substantive. In a meta-study of 43 research articles Doucouliagos (1995) found that participation was overall associated with greater performance in all cases except co-determination, where there was a negative association with performance.

Consequently, we would predict the following performance outcomes associated with the sharing of control rights:

Hypothesis 1: *In situations where control rights in the forms of decentralized decision making practices and company information are shared with employees there will be a positive impact on company performance.*

Hypothesis 1a *An interaction of a high degree of control rights with a low degree of shared return rights will promote suboptimal performance outcomes.*

Shared Return Rights – Profit sharing and Employee Share Schemes. The overall theoretical argument associated with an increase in productivity linked to sharing return rights is largely due to increased efficiency associated with the use of labor (Kruse, 1992; 1993; Sesil, et al., 2003). The rationale used to support the potential productivity effects of profit-sharing is that the increase in effort, including greater opportunity to act on asymmetric information, increased co-operation among workers, and that more peer monitoring may result in a greater level of productivity in profit-sharing firms. Rousseau and Shperling (2003) argue it is more efficient to include both profit-sharing and employee share ownership. The argument is based on the notion that there will be greater commitment to ownership when the practices are combined. There is evidence from Brown et. al. (1999) that effects were greater when profit-sharing and equity

sharing were combined.

According to Rousseau and Shperling (2003) high-technology knowledge intensive firms are much more likely to motivate workers though the same alignment associated standard principal-agent theory – initially developed in order to determine how to best align owners and non-owners. There is additional evidence that when equity compensation and profit sharing are combined there will be substantially greater performance outcomes (Pierce and Furo, 1990). What seems to matter is not the size of the ownership stake for employees but rather the fact that they have any ownership at all (Hammer and Stern, 1980). As far as employee attitudes are concerned, it also seems to matter exactly what practices are combined (Keef, 1998).

Much of the theorised increased productivity effects associated with group incentive schemes concerns the fact that employees in profit-sharing firms have a greater level of motivation and exhibit a higher level of effort (Kruse, 1993; Sesil et. al., 2003). Group incentives are here meant to include practices such as profit sharing or company-wide bonuses. Regarding the positive effects of these incentives, the work of Weitzman (1995) and Kruse (1988; 1993) has drawn substantial attention to the productivity and employment effects of group incentive schemes or profit sharing. The positive productivity effects associated with these group incentive schemes are primarily due to employees aligning their efforts in a direction, which maximizes profits. Other positive influences include the fact that there should be a higher degree of mutual monitoring which will reduce the need for supervisory control and associated costs.

There are, however, arguments against any productivity effects associated with group incentive schemes such as profit sharing and company bonuses. One of the strongest charges against the productivity-enhancing effects of group-based incentive scheme is the free rider or 1/n problem (Sesil and Kroumova, 2005). In addition to the free-rider problem there is also the

fact that many employees may be averse to increasing the amount of compensation, which they have at risk (Rousseau and Shperling, 2003). The firm may be in a better position to absorb any risk associated with outside factors affecting remuneration. The free-rider problem has been dealt with largely by relying on arguments taken from game theory (Weitzman and Kruse, 1990). The argument states that there is a co-operative and non-co-operative solution associated with group interactions. As people engage in a repeated game they have a choice to free ride on the efforts of others or to work together. In the matter of profit-sharing it is the case that when everyone works together everyone will be better off. Consequently, as the game is repeated those involved may eventually move towards a co-operative solution.

Bhargava (1994) using a panel data-set which allows a robust control for firm fixed effects and allows an examination of the introduction of a profit-sharing plan on profitability, finds there to be a positive effect of profit-sharing on the profitability of the firm. The result remains robust even after controlling for potential endogeneity. Estrin and Wilson (1987) find that the average rate of return on capital is higher in profit-sharing firms than non-profit sharing firms. Using share price as a proxy for profitability, Richardson and Nejad (1986) find there to be a positive association with profit-sharing. We would predict the following performance outcomes associated with the sharing of return rights.

Hypothesis 2: *Where return rights in the form of profit sharing and share ownership are shared with employees there will be a positive impact on establishment performance.*

Hypothesis 2a: *An interaction of a high degree of shared return rights with low control rights will lead to suboptimal performance outcomes.*

Combining Control Rights and Return Rights. In a situation where control and return rights are combined the interests of the principal and their agents may be more closely aligned. Combining the claim to residual profits with control over work processes creates an environment in which employees have the authority to use their superior job knowledge to enhance efficiency, as well as the incentive to ensure they align their efforts with the best interests of the establishment (Sesil, 2000). Through combining group incentive schemes and worker control over the work process both the moral hazard and, to a degree, the free-rider problem are addressed. By combining both of these practices, those with the greatest job information and who are in the best position to make efficiency-enhancing job changes, are provided with the incentive necessary to improve establishment performance (Ben-Ner and Jones, 1995). The combination of these practices reduces the moral hazard problem due to the fact that people now have the incentive necessary to minimize employee shirking.

There are a number of studies, which explore the relationship between combining controls and return rights and the impact they have on organisational outcomes. Conte and Svejnar (1990) find that employee participation (EP) and profit-sharing had significant effects both independently and combined. Mitchell, Lewin and Lawler (1990) found that employee participation and group-based incentives were significant independently but not combined. Kruse, (1993) found positive effects of profit sharing but no combined effects or independent effects of EP. Cooke (1994) found that the combination of EP and group-based compensation schemes had fairly substantial effects on firm performance. These effects were also considerably amplified in unionized firms. Fernie and Metcalf (1995) found that workplaces with employee involvement characteristics, such as employee-management communication channels and the presence of incentive schemes, had higher productivity than other types of workplaces.

Consequently, supporting the theoretical framework of Ben-Ner and Jones (1995) and Rousseau and Shperling (2003) we would predict due to knowledge worker's asymmetric information and the subsequent difficulties associated with monitoring, the most efficient incentive contact will be to share residual control rights with front-line workers who are in direct contact with customers, services and the goods produced. We would predict the following performance outcomes where control and return rights are shared with employees.

Hypothesis 3: *The strongest positive impact on company performance will be when both control and return rights are shared with employees.*

Hypothesis 3a: *Interacting both control and return rights will have the strongest performance consequence.*

METHODS

Workplace Employee Relations Survey (WERS) Data set. The data used for this analysis is drawn from the British Workplace Employee Relations Survey of 1998 (WERS98) administered by the Department of Trade and Industry. The survey is a nationally representative sample of all workplaces with 10 or more employees and covers all industrial classifications except agriculture and both public and private establishments. The dataset was conducted by face-to-face interviews with the most senior workplace manager with responsibility for human resource issues. Interviews were conducted between October 1997 and June 1998 with a response rate of 80.4 percent. Interviews were conducted in 2191 establishments.

The sampling design used allows for the generalization of the results for all 340,000 establishments in the Britain (Forth and Millward, 2004). Depending on the dependent variable, the number of establishments used in our analysis is between 1,247 and 1,439.

Analytical Issues

There are a number of analytical issues that need to be addressed when attempting to determine if the impact of a human resource policy or practice on performance (Greene, 1993). One issue is measurement error associated with error in the measurement of firm-level human resource practices (Gerhart, Wright, McMahan and Snell, 2000; Huselid and Becker, 2000). An effective technique used in order to reduce this form of error is the use of multiple respondents (Datta, et al., 2005). Another means of reducing the likelihood of firm-level measurement error is to conduct establishment vs. firm-level analysis. The potential for problem is reduced when the analysis is conducted an establishment-level. The average size of the establishment size is 288. In addition, I use multiple measures of control rights and return rights.

A second analytical issue associated with this line of research is the issue of omitted variable bias. This is bias introduced to the coefficients when other factors influencing performance are correlated with the error term (Hsiao, 1986). One way of controlling for this is through the use of fixed effects estimators that control for time invariant factors influencing performance (Green, 1993). Another method of controlling for the influence of other factors impacting performance is by identifying other factors influencing performance and including them as controls in the estimation model (Huselid and Becker, 1996). We attempt to include a very broad range of controls which may impact firm performance.

The third analytical issue is the problem of reverse causality or endogeneity. In order to

address the final analytical issue I follow the methodological treatment of Huselid (1995). I use two-stage least square which generates results consistent with those obtained using OLS. The results reported represent those using the more conservative two-stage least square. In addition to addressing these issues of measurement, omitted variable bias and reverse causality - steps were also take to verify that the assumptions of OLS were not broken. Using the Durbin-Watson test I verified there was no significant problem with autocorrelation of error terms and regressions were also run controlling for hetereskedasticity.

Measure of Control and Return Rights. Detailed measures of our independent, dependent and control variable can be found in table 1. Consistent with the theoretical the work of Ben-Ner and Jones(1995), Milgrom and Roberts (1992), and Rousseau and Shperling (2003); Pierce et. al. (2001) and Pierce et. al. (1991) our measures of control and return rights include profit-sharing plans and shared equity compensation (e.g. stock options, ESOPs, Restricted Stock etc.). We also include practice that provides employees with business information and employee involvement practices that provide employees with control over the work processes.

Following the empirical treatment of Datta, et al. (2005); Guthrie (2001); and Huselid (1995), we treat the human resource policies and practices that comprise control and return rights as first a continuous variable and then we examine the interactive effect of combined control and return rights. The use of an additive index is well established in the empirical literature (Becker and Huselid, 1998; Datta et al., 2005; Guthrie, 2001; Ichniowski, et al., 1997) and is appropriate for the type of analysis being conducted here where we are interested in evaluating whether a greater concentration of these practices have an impact on performance.

Specific shared control rights include: Does the establishment have two-way communication programs that enable front-line employees to communicate potentially productivity enhancing ideas to senior managers and alternatively, senior managers critical business information; What extent does the establishment use teams; the use of autonomous work groups and finally does the establishment generally provide the employees with a high degree of autonomy in association with the their work processes. Share return rights include if: profit-sharing plans, including deferred profit-sharing, Inland Revenue approved and unapproved plans and employee share schemes are used at the establishment. Both Control and Return Rights are standarized by calculating z-scores for the two rights of ownership.

Dependent Variables Measures. Four dependent variables to determine the impact of the control and return rights on performance one is an objective measure of total establishment sales and the other three are subjective measures of perceived performance relative to respective industry.

Total sales as a measure of performance is a very common metric used to evaluate performance (Datta, et al., 2005; Guthrie, 2001; Huselid, 1995). The use of subjective performance measures in not uncommon in HR/IR literature (Delany and Huselid, 1996) and is often used when evaluating establishment-level data (Fernie and Metcalf, 1995). The three subjective measures of performance each self-reported performance measure consisting of relative, profitability, labor productivity and quality of goods and services produced. Standarizing the dependent measures is again accomplished by creating z-scores.

Control Variables. The control variables used are frequently used in the literature (Datta, et ,al., 2005; Guthrie, 2001; Huselid, 1995) and includes: establishment size (number of employees), union presence, product market competition, labor cost intensity and 8 industry dummy variables.

Recent work by Datta et al. (2005) factor in product market competition and this is clearly an important factor contributing to the success of the enterprise. Unionization is often a factor in performance. Union status is frequently included (Datta et al., Guthrie, 2001; Huselid, 1995) and recently labor cost intensity (Datta, et al., 2005) is also included as control variable. z-scores are again calculated for product market competition and labor cost intensity.

RESULTS

Table 2 presents the means, standard deviations and the correlations. The average establishment size is a very moderately sized 288, the minimum is 10 and the maximum is nearly 29,000. Nearly 66% of the establishments have at least some of the employees in a union.

There is an especially strong correlation between the subjective measures. Though there is a significant correlation between the objective and subjective measures (except with the quality measure) these are not as statistically strong as the other measures. However, with the exception of the subjective measures we do not find strong evidence of correlations, which indicates that multicollinearity does not appear to be a problem.

Tables 3 and 4 and 5 and 6 are the reported regression results for the four dependent variables and all independent variables. We find support for hypothesis 1 and 2. We see that across for control and for return rights on their own there is a strong positive relationship with

our performance measures. The impact on these performance measures are amplified when control rights and return rights are added together. Each of these three hypotheses is accepted.

For all of the four performance measures we find positive and significant outcomes associated with sharing control rights in the form of employee involvement with employees. In each of these cases there is substantial impact on performance. We also find strong support for Sharing return rights in the form of profit sharing and share ownership is strongly associated with superior performance outcomes in the case of all four-performance outcomes. We again find statistically significant result throughout all four-performance measures. We also find very strong support for hypothesis 3. Again, all of the results are positively and strongly so. In addition, not only are they statistically significant, but they are also significantly greater than either the use of control rights or return rights. Even though in the case of both return and control rights there is a positive and significant impact associated with the use of control rights and return rights we see that the coefficients are greatest when the two are used in combination. The use of the two in combination seems to be especially closely associated with greater levels of performance outcomes.

We see that the interactions largely behave as predicted in hypotheses 1a, 2a, and 3a. We see that no control and no Return is associated with insignificant performance outcomes. We also see that interacting a high level of controls rights with low return rights (hypothesis # 1a) and high return rights with low control rights (hypothesis # 2a) and not as efficient as an interaction of both high control and high return (hypothesis # 3a). Again, this supports our prediction from theory that the combination is the most efficient.

DISCUSSION AND CONCLUSION

Traditional incentive contract theory argues it is most efficient to assign ownership rights directly to senior management so they will have the maximum incentive to keep the workforce in line (Lazear, 1986). Today, the drivers of success in our economy are very different – company performance is largely about accessing and leveraging the knowledge, skills and abilities of the workforce (Leana and Rousseau, 2000). Traditional fixed wage incentive contacts largely reflect a "command and control" contracting model where top management "monitor" the workforce in order to dictate their activities.

The results here provide clear support for the theoretical work of Ben-Ner and Jones (1995), Blair and Stout (1999), Marsden (2003), Pierce, Kostove, and Dirks (2001), Pierce, Rubenfeld, and Morgan (1991), and Rousseau and Shperling (2003). Clearly, the sharing of the rights of ownership provides superior performance outcomes. While it is not fair to say that this delivers a fatal blow to the work of Alchain and Demetz (1972), their notion that the most efficient incentive contract, where all residual control and returns remain with top management, is based on an incentive and motivational paradigm grounded largely in an "Old Economy" reality. No longer is the production of goods and services primarily a function of tangible capital. In the "knowledge economy" the workforce is the primary means of production, and here we provide evidence that giving employees control over the work processes and share in the returns, result is greater output and perceptions of performance.

Given the tremendous changes in the external environment scholars across many disciplines are calling into question fundamental issues associated with all facets of the Legal (Blair and Stout, 1999) and Financial and Accounting (Lev, 2001; Zingales, 2000) structure of

the firm. These substantial environmental changes are having substantial implication for efficient incentive contract design (Ben-Ner and Jones, 1995; Marsden, 2003; Rousseau and Shperling, 2003). There is increasing evidence that provides support for the notion that the old fixed wage system no longer promotes maximum performance outcomes. The notion of property rights and who ultimately "control" assets need to be re-thought. We find considerable support for maximum efficiency the rights of ownership should be shared with non-executive employees.

According to Milgrom and Roberts (1992) the two rights of ownership provide the motivational impact necessary to develop and maintain an asset. It has long been held that these rights need to be assigned to top managers because they ultimately are in the best position to determine what exactly to do with that asset. Here we provide evidence that in situations where most of the productivity enhancing private information resides with employees, as in the knowledge economy, front-line employees "own" their knowledge of their skills, abilities, and the knowledge they have of customer preferences and the production process. It appears efficient incentive contracts need to better recognize that in the new economy efficient incentive contracting requires "sharing" these rights of ownership with employees.

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TABLE 1
Questionnaire Items for Independent, Dependent and Control Variables

Variable and Items	Range
Independent Variables:	
Control Rights	
High degree of two-way communication if #1.== "Strongly Agree", and # 2.== either "Strongly disagree" or "Disagree".	1 - 0
Questionnaire items 1. We do not introduce any changes here without first discussing the implications with employees 2. Most decisions at this workplace are made without consulting the employees	
Presence of Teams at the establishments if 80% or more of employees in the largest occupational group at this workplace work in formally designated teams?	1 - 0
Work task control if employees in the largest occupational group have "A lot" of variety in their work; discretion over how they do their work; and, control over the pace at which they work.	1 – 0
Autonomous work teams if "Yes" for all four questionnaire items.	1 – 0
Questionnaire items Which, if any, of the following statements apply to the way that teamworking operates at this workplace: Teamworking depends on team members working together Team members are able to appoint their own leaders Team members jointly decide how the work is to be done Teams are given responsibility for specific products or services	
Return Rights	
Do any employees at this workplace receive payments or dividends from any of the following variable pay scheme?	
1. Profit-related payments or bonuses	1 – 0
2. Deferred profit sharing scheme	1 – 0
3. Employee share ownership schemes	1 – 0
4. Inland Revenue profit-related pay scheme	1 – 0
5. Non-Inland Revenue approved profit-related pay scheme	1 – 0

TABLE 1 Continued
Questionnaire Items for Independent, Dependent and Control Variables

Variable and Items	Range
Interactions:	
No Control No Return: No control right practices and no return right practices	1 - 0
Low Control Low Return: One control right practice and one return right practice	1 - 0
High Control Low Return: Two or more control right practices one return right practice	1 - 0
Low Control High Return: One control right practice and two or more return right practices	1 - 0
High Control High Return: Two or more control right practices and two or more return right practices	1 - 0
Control Variables:	
Product market competition:	
How would you assess the degree of competition in this market? Is it.. (1: very high - 5: very low)	1 - 5
Labor cost intensity:	
About what proportion of this establishments (sales revenue/operating costs) is accounted for by wages, salaries and Other labour costs like pensions and national insurance? (1: less than 25% - 4: more than 75%)	1 - 4
Percent of employees who are members of a trade union	
Enter estimated percentage of employees at this workplace who are members of a trade union or independent staff association	0 - 100%
Number of employees	
Total number of male employees at the establishment + total number of female employees at the establishment	10 - 22,000
Dependent Variables:	
Total establishment sales	0 - 10,980,000 pds
Perceived organizational performance	1 - 5
How would you assess you workplaces?	1 - 5
Financial performance?	1 - 5
Labour productivity?	1 - 5
Quality of product or service?	1 - 5

TABLE 2
Means and Correlation Coefficients

	Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10	11	12
1	Establishment sales	17.27	62.76	1.00											
2	Establishment financial performance	3.67	0.85	0.08	1.00										
3	Establishment labor productivity	3.57	0.78	0.04	0.49	1.00									
4	Establishment product service quality	2.93	1.19	0.01	0.23	0.30	1.00								
6	Union	0.66	0.47	0.04	0.02	0.01	-0.02	1.00							
7	Labor cost intensity	-0.07	0.99	-0.21	-0.06	-0.01	0.04	0.15	1.00						
8	Establishment size	288.74	847.31	0.11	0.03	-0.02	-0.03	0.13	0.10	1.00					
9	Product market competition	0.07	0.97	0.12	-0.02	-0.01	-0.03	-0.22	-0.22	-0.02	1.00				
10	Shared control rights	0.0032	1.00	0.06	0.08	0.09	0.02	0.14	0.08	-0.03	-0.03	1.00			
11	Shared return rights	0.0036	1.00	0.27	0.11	0.08	0.05	0.02	-0.31	0.00	0.13	0.00	1.00		
12	Combined control and return rights	-0.0017	1.00	0.27	0.14	0.12	0.05	0.08	-0.22	-0.01	0.10	0.50	0.86	1.00	

All correlations greater than or equal to .05 are significant at the .05 level; those greater than or equal to .07 are significant at the 01 level, and those greater than or equal to .10 are significant at the .001 level. All tests are single tailed. Means for productivity and employment are reported here as raw means, all further analysis are conducted using their natural logarithms.

TABLE 3
Sales

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Step 1: Controls					
Establishment size	0.0089 ***	0.0090 ***	0.0090 ***	0.0091 ***	0.0090 ***
Product market competition	3.00 *	2.61 *	2.60 *	2.95 *	2.63 *
Labor cost intensity	-4.04 **	-3.26 **	8.89 **	-4.01 **	-3.46 **
Union	11.47 **	8.30 **	-3.33 **	10.46 **	10.21 **
Manufacturing	6.51	1.54	2.53	7.21	2.22
Electric	-2.12	-15.87	-14.51	-2.75	-14.95
Construction	-0.98	-3.21	-2.44	0.19	-2.55
Wholesale	82.30 ***	72.02 ***	73.23 ***	82.60 ***	74.77 ***
Hotels	5.92	1.04	2.11	6.59	2.79
Transportation	7.36	-0.12	0.99	7.37	1.83
Financial	20.99 **	6.57 **	7.90 **	20.63 **	9.09 **
Other Business	8.40	4.14	4.95	9.72	4.61
Step 2: Independent Effects					
Shared Control Rights Index		4.25 **			
Shared Return Rights Index		9.20 ***			
Shared Control and Return Rights Index			9.75 ***		
Step 3: Interaction Effects					
No Control x No Return				-17.90 **	
Low Control x Low Return					9.08
High Control x Low Return					12.28 *
Low Control x High Return					19.88 **
High Control x High Return					32.89 ***
R2	0.25	0.27	0.27	0.25	0.27
N	1439	1439	1439	1439	1439

* P > .01
** if P > .05
*** if P > .001

TABLE 4
Profitability

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Step 1: Controls					
Establishment size	0.000025	0.000026	0.000026	0.000026	0.000026
Product market competition	-0.05 *	-0.05 *	-0.05 *	-0.05 *	-0.05 *
Labor cost intensity	-0.05 *	-0.04 *	-0.0093 *	-0.05 *	-0.05 *
Union	0.02	-0.0095	-0.04	0.01	0.0065
Manufacturing	-0.09	-0.13	-0.13	-0.08	-0.13
Electric	0.07	-0.07	-0.07	0.07	-0.05
Construction	0.03	0.01	0.01	0.04	0.01
Wholesale	0.09	-0.0094	-0.01	0.09	0.02
Hotels	0.18 *	0.15 *	0.15 *	0.19 *	0.16 *
Transportation	-0.09	-0.16	-0.16	-0.09	-0.14
Financial	0.17	0.03	0.02	0.17	0.07
Other Business	0.02	-0.02	-0.02	0.03	-0.02
Step 2: Independent Effects					
Shared Control Rights Index		0.06 **			
Shared Return Rights Index		0.09 **			
Shared Control and Return Rights Index			0.11 ***		
Step 3: Interaction Effects					
No Control x No Return				-0.13	
Low Control x Low Return					0.0083
High Control x Low Return					0.10
Low Control x High Return					0.17
High Control x High Return					0.25 **
R2	0.01	0.03	0.03	0.02	0.02
N	1307	1307	1307	1307	1307

* P > .01
** if P > .05
*** if P > .001

TABLE 5
Labor Productivity

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Step 1: Controls					
Establishment size	0.0000	0.0000	0.0000	0.0000	0.0000
Product market competition	-0.01	-0.02	-0.02	-0.01	-0.02
Labor cost intensity	-0.04	-0.03	-0.02	-0.04	-0.03
Union	0.01	-0.02	-0.03	0.00	-0.01
Manufacturing	-0.21 **	-0.24 **	-0.26 **	-0.21 **	-0.23 **
Electric	-0.12	-0.24	-0.27	-0.13	-0.23
Construction	-0.14	-0.14	-0.16	-0.13	-0.14
Wholesale	-0.06	-0.15	-0.18	-0.06	-0.12
Hotels	-0.06	-0.07	-0.10	-0.05	-0.06
Transportation	0.01	-0.05	-0.07	0.01	-0.02
Financial	-0.09	-0.22	-0.25	-0.10	-0.19
Other Business	-0.01	-0.04	-0.06	0.00	-0.04
Step 2: Independent Effects					
Shared Control Rights Index		0.08 ***			
Shared Return Rights Index		0.09 **			
Shared Control and Return Rights Index			0.12 ***		
Step 3: Interaction Effects					
No Control x No Return				-0.24 **	
Low Control x Low Return					0.17 *
High Control x Low Return					0.21 **
Low Control x High Return					0.20 **
High Control x High Return					0.43 ***
R2	0.01	0.03	0.03	0.02	0.03
N	1247	1247	1247	1247	1247

* P > .01
** if P > .05
*** if P > .001

TABLE 6
Quality of Product or Services

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Step 1: Controls					
Establishment size	-0.000036	-0.000035	-0.000036	-0.000036	-0.000037
Product market competition	0.00	0.00	0.00	0.00	0.00
Labor cost intensity	0.07	0.07	-0.0943	0.07	0.07
Union	-0.07	-0.0946	0.07	-0.07	-0.0840
Manufacturing	0.18	0.16	0.15	0.18	0.17
Electric	0.35	0.26	0.24	0.35	0.27
Construction	0.11	0.11	0.10	0.11	0.12
Wholesale	0.17	0.1022	0.09	0.17	0.13
Hotels	0.22	0.20	0.19	0.22	0.23
Transportation	0.10	0.06	0.04	0.10	0.08
Financial	-0.13	-0.22	-0.24	-0.13	-0.19
Other Business	0.11	0.09	0.08	0.11	0.09
Step 2: Independent Effects					
Shared Control Rights Index		0.05			
Shared Return Rights Index		0.06			
Shared Control and Return Rights Index			0.08 **		
Step 3: Interaction Effects					
No Control x No Return				-0.01	
Low Control x Low Return					-0.1353
High Control x Low Return					0.05
Low Control x High Return					-0.01
High Control x High Return					0.14
R2	0.01	0.01	0.01	0.01	0.01
N	1338	1338	1338	1338	1338

* P > .01
** if P > .05
*** if P > .001