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The Adoption and Termination of Profit Sharing for Employees: Does Management's Attitude Play a Role?

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Abstract: Examinations on the determinants of profit sharing usually focus on objective firm characteristics. Using data from manufacturing firms in Germany, this study shows that managers' subjective attitudes towards profit sharing also play an important role in the adoption and termination of this payment scheme. Positive management attitudes are associated with an increased likelihood of adopting profit sharing. While to some extent this entails failed experimentation, positive managerial attitudes also substantially contribute to a sustained use of profit sharing. The pattern of results holds even when controlling for a variety of objective firm characteristics.

JEL Classification: J33, M52.

Keywords: Profit sharing, management attitude, management discretion, subjective factors, experimentation.

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1. Introduction

Since Weitzman's (1984) much-noticed book on the "Share Economy" there has been a remarkably growing interest in profit sharing. This interest has been spurred by the idea that shared capitalism may contribute to both increased firm performance and improved employee well-being (Blasi et al. 2016, Freeman et al. 2010a). Against this background, a series of econometric studies have examined the determinants of profit sharing use.[1] Those studies usually focus on objective firm characteristics such as firm size, technology, work organization or employee representation. Management's subjective view towards profit sharing is not taken into account as a determinant. The omission of this subjective factor would not be an issue if management's attitude is nothing more than a reflection of objective circumstances. Yet, if management's view towards profit sharing is not completely determined by the firm's circumstances, it may be an independent determinant of profit sharing. As noted by Kruse (1996), employer discretion plays a large role in the adoption of profit sharing. This discretion leaves room for managers to follow their subjective attitudes. Thus, taking managers' attitudes into account can advance our understanding of the factors that influence the adoption of profit sharing.

A deeper understanding of these factors is also important from a policy viewpoint. A series of OECD countries have implemented policy measures to promote profit sharing (OECD 1995, Perotin and Robinson 2003, Poutsma et al. 1999, Poutsma et al. 2013). Implementing effective policy measures requires in-depth knowledge of the determinants that lead firms to adopt profit sharing.

This study uses German establishment data to examine the role of managers' attitudes in the adoption and termination of profit sharing. The results show that

establishments are more likely to adopt profit sharing if management has a very positive view towards profit sharing. On the one hand, to some extent this entails failed experimentation. Managers with initially positive attitudes adopt profit sharing plans that turn out to be a failure. In this case, the plans are dropped in the end. On the other hand, positive managerial attitudes can substantially contribute to a sustained use of profit sharing. This supports the view that a supportive managerial environment is required to strengthen positive incentive effects of profit sharing. In that case, positive managerial attitudes involve a reduced likelihood that profit sharing is terminated.

While most of the examinations on the determinants of profit sharing have paid no attention to subjective factors, a notable exception is a study by Long (1997). Using data from Canada, he finds that managerial philosophy has an influence on both the use of profit sharing and the intention to introduce profit sharing. Thus, his study reaches a conclusion similar to ours about the role of subjective factors. Apart from that, Long's study and our analysis differ in several ways. First, like most other examinations on the determinants of profit sharing, his study is cross-sectional. By contrast, our analysis provides detailed insights into the dynamics of the use of profit sharing. Second, Long finds that almost exclusively management philosophy plays a role in the use of profit sharing. Our analysis provides evidence that both subjective factors and objective firm characteristics are determinants of profit sharing. The analysis demonstrates that taking subjective and objective factors jointly into account can substantially improve estimation results.

On a broader scale, our analysis also contributes to literature on management style and corporate behavior (Bamber et al. 2010, Bertrand and Schoar 2003, Graham et al.

2013, Kaplan et al. 2012, Malmendier and Tate 2005). That literature examines the role of manager-specific influences such as overconfidence, optimism and resoluteness on investment, capital structure, financial disclosure, and mergers and acquisitions. Our analysis shows that managers' attitudes also play a role in human resource management.

The rest of the paper is organized as follows. The second section provides the background discussion. The third section presents the data and variables while the fourth section provides the estimation results. The fifth section concludes.

2. Background Discussion

In this section, we first discuss objective firm characteristics associated profit sharing and then turn to a discussion of managers' subjective attitudes. Starting with the objective firm characteristics helps clarify the role of subjective factors in the adoption of profit sharing.

2.1 Objective Firm Characteristics and the Incentive Effects of Profit Sharing

One important reason for analyzing the objective firm characteristics associated with the use of profit sharing is that the incentive effects of profit sharing can depend on circumstances and type of firm. In order to motivate workers, employers face a choice between various incentive schemes such individual-based performance pay, group-based performance pay or firm-wide incentives. Examining the firm characteristics that lead employers to adopt profit sharing yields insights into the circumstances under which profit sharing is a suitable incentive scheme.

However, some authors doubt that profit sharing has any positive incentive effects at all (e.g., Oyer 2004). Profit sharing potentially suffers from a free rider problem among workers. The incentive to exert effort dissipates as the returns to that effort are distributed among all workers participating in the profit sharing scheme. The free rider problem gets more severe as the number of workers increases. That would imply that specifically larger firms should avoid using profit sharing. The empirical evidence does not support this prediction. Most empirical studies find either no or even a positive association between firm size and profit sharing. This indicates that firms may find ways to mitigate or solve the free rider problem. Possible ways to overcome the free rider problem are repeated games (Che and Yoo 2001, MacLeod 1988), mutual monitoring and peer pressure (Carpenter et al. 2009, Freeman et al. 2010, Kandel and Lazear 1992, Knez and Simester 2001), reciprocity and co-worker altruism (Cornelissen et al. 2014, Rotemberg 1994), and production technologies characterized by a high degree of worker interdependence (Adams 2006, Heywood and Jirjahn 2009).

Nonetheless even in the presence of a free rider problem profit sharing can have specific advantages over other performance pay schemes. If work is characterized by multitasking, workers must allocate their efforts across different tasks. Individual performance measures are often unavailable for all tasks. An emphasis on individual performance as measured by one or a few indicators causes workers to cut back on productive behaviors for which they are not rewarded (Holmstrom and Milgrom 1991). Theses behaviors include helping colleagues, maintaining equipment, cultivating customer goodwill, striving for quality and reducing chances of workplace injury. In contrast to individual performance pay, profit sharing provides incentives to exert effort

in all activities that are relevant to the firm's profit (Baker 2002, Drago and Turnbull 1988, Jirjahn 2000). Relatedly, profit sharing provides incentives for flexibility as it increases workers' willingness to respond to internal productivity shocks and changes in external market conditions (Drago and Turnbull 1991, Jirjahn 1998: pp. 97-101). All in all, this suggests that firms should be more likely to adopt profit sharing if the nature of production is characterized by complex and multifaceted tasks. Empirical studies confirm that indicators of multitasking such as high skill requirements, flexible work assignments, rotation among wide ranges of tasks, employee involvement groups, and self-managing teams are positively associated with profit sharing (see Heywood and Jirjahn 2006 for a survey).

Furthermore, investments in human capital may stimulate the use of sharing schemes as such schemes can help safeguard the investments. If investments in the general or specific human capital of the employees play an important role in the firm's performance, profit sharing may be adopted to reduce the risks associated with these investments and, hence, to strengthen the incentives to undertake the investments (Green and Heywood 2011, Guery and Pendleton 2014, Robinson and Zhang 2005). On the one hand, an employer providing general training for employees bears the risk that the investment is wasted if employees leave the firm after they have the received the training. To the extent profit sharing reduces the risk of separations, it increases the expected return to the training investment. On the other hand, employees face a risk if they invest in their firm-specific human capital. The employer may capture the rents generated from the firm-specific investments by withholding promised wage increases or promotions. A

profit sharing contract mitigates this hold-up problem as it ensures that employees participate in the rents generated by their specific human capital.

However, profit sharing can involve its own risks. Employees face the risk that the employer does not pursue complementary investments designed to increase financial performance. Moreover, employees run the risk that the employer tries to save costs by underreporting profit (Kurtulus et al. 2011).[2] Thus, mechanisms are required that help build cooperative and trustful relations between employer and workforce in order to increase employees' interest in profit sharing and to strengthen the productive incentive effects of profit sharing. This brings us to the role of industrial relations institutions. The international evidence suggest that unions usually do not play a trust-building role and often even oppose profit sharing (see Heywood and Jirjahn 2006 for a survey). In contrast, evidence from Germany suggests that nonunion worker representation may have the potential to foster trust and cooperation. Firms with a works council are more likely to use profit sharing (Heywood et al. 1998, Heywood and Jirjahn 2002). A works council can facilitate the adoption of effective profit sharing plans by creating binding commitments of the employer. It can monitor the accounting of profit and can participate in decisions that influence the financial performance of the firm.

2.2 The Role of Managers' Attitudes

If the adoption of profit sharing were completely determined by objective firm characteristics, managers' subjective attitudes would play no role. Profit sharing would be used in situations that lead to a comparative advantage of this incentives scheme over alternative payment methods. It would not be used in situations that lead to a comparative

disadvantage. However, to the extent managers have discretionary power in decision making, their subjective attitudes enter into the decision to adopt profit sharing for employees.

The economic literature usually focuses on the incentives that induce managers to use their discretionary power in a productive way (Murphy 1999, 2013). Managerial profit sharing provides incentives to take measures in order to increase firm performance. These measures can involve the adoption of profit sharing for employees (Heywood et al. 1998, Heywood and Jirjahn 2002). Yet, even if managers have an incentive to increase firm performance, uncertainty remains about the way in which performance can be increased. Thus, the adoption of profit sharing for employees not only depends on managerial incentives, but also on managers' views towards the suitability of this payment scheme. These views can differ between managers for several reasons.

One reason may be that managers differ in their knowledge of the potential advantages and disadvantages of profit sharing. The individual knowledge of the effects of profit sharing depends on the manager's experience, education and social background. The manager's knowledge also hangs on the extent to which he or she keeps up to date with developments in recent research on profit sharing by attending management seminars or calling in consultants.[3]

Moreover, one has to take into account that even scientific insights are often incomplete and fragmentary. This also holds true for research on the determinants and effects of profit sharing. While this research has made progress in analyzing the roles played by work organization, human capital investment and cooperative employer-employee relations, recent research is less conclusive regarding the complementary

performance management practices that are required for a successful adoption of profit sharing. There are conflicting findings as to the question of whether or not profit sharing should be combined with other incentive schemes (Barnes et al. 2011, Jirjahn 2002, Jirjahn and Poutsma 2013, Pendleton 1997, 2006, Pendleton and Robinson 2015, Wageman 1995). This incomplete scientific knowledge leaves room for subjective interpretation.

Even if perfect knowledge of the possible effects of profit sharing was available, managers would still face the problem that they often lack sufficient information about the local conditions at lower levels of hierarchy in the firm. These local conditions can have an important influence on the suitability of profit sharing. For example, while repeated games among workers can potentially solve the free rider problem, a shortcoming of repeated games is that they involve multiple equilibria. Whether profit sharing results in a high-effort equilibrium or a low-effort equilibrium may depend on social relationships between workers and the social norms that evolve within work teams. These very specific circumstances are difficult to observe for management. Similarly, the extent of peer pressure induced by profit sharing depends on idiosyncratic circumstances such as the workers' propensity to exert pressure and their responsiveness to pressure. Incomplete information about these specific and idiosyncratic circumstances implies that managers' subjective views about the local conditions influence their attitude toward profit sharing. A manager who expects that employees will get stuck in a low-effort equilibrium is less likely to have a positive attitude than a manager who trusts that employees are able to realize a high-effort equilibrium. Thus, to the extent managers' subjective opinions about unobservable circumstances play a role, their attitudes towards

profit sharing are not completely determined by the observable general characteristics of the firm.

If managers' attitudes towards profit sharing play their own role, there can be cases in which these attitudes do not match the objective situation of the firm. Over-pessimistic managers may refrain from adopting profit sharing even in situations that lead to positive effects of profit sharing. Such pessimistic managers miss the opportunity to increase firm performance. Vice versa, over-optimistic managers may implement profit sharing even if the firm's situation does not lead to positive effects of this incentive scheme. Such over-optimism results in failed experimentation. After some time, managers may realize that profit sharing fails to have the desired effects so that they adjust their expectations and drop the profit sharing plan.

However, the effects of profit sharing may not only depend on the objective circumstances of the firm but also on the managers' attitudes themselves. To the extent profit sharing requires a supportive managerial environment to deliver performance-enhancing effects, positive managerial attitudes are a precondition for its successful and sustained adoption. In this sense, managerial attitudes can be self-fulfilling. Managers with a positive attitude are more likely to adopt complementary measures in order to ensure positive effects of profit sharing. Recent research suggests that employees' ignorance concerning the nature and scope of profit sharing can undermine positive effects (Budd 2010, Jones and Kato 2010, Sweins and Kalmi 2008). Profit sharing plans will only have an influence on employees' behavior if employees know about and understand the plans. Managers will put more effort in providing information to employees if they assume that profit sharing can increase the firm's performance.

Moreover, positive incentive effects of profit sharing require that employees trust management. While worker representation may have the potential to build trust, it does not automatically generate the trustworthy managerial behavior that is required for a successful adoption of profit sharing. The German experience suggests that the functioning of a works council itself depends on managers' willingness to cooperate with it and to involve it in decision making (Frege 2002, Heywood and Jirjahn 2014, Jirjahn and Smith 2006). The willingness to cooperate with the works council in turn hangs on positive managerial attitudes.

3. Data and Variables

3.1 Data Set

The empirical investigation is based on the Hannover Panel, a four-wave panel (1994-1997) with data from manufacturing establishments in the federal state of Lower Saxony (Gerlach et al. 2003). The important advantage of the data set is that it contains information on both profit sharing and managers' attitudes toward profit sharing. Moreover, it provides a rich set of control variables for objective characteristics of the establishments. This helps isolate the role of managers' attitudes.

Note that the prediction of a link between managerial attitudes and profit sharing is general and does not depend on a specific point in time. Thus, even though the data set used is from the 1990s, it allows testing this theoretical prediction.

The population of the survey consists of all manufacturing establishments with five or more employees. The sample is stratified according to firm size and industry, with an oversampling of larger establishments. The sample was designed in such a way that a

sufficient number of cell entries remained after four waves despite sample attrition. In the first wave of interviews (1994), 51 percent of the establishments in the sample agreed to participate. In spite of this non-response rate the difference between the planned and realized stratification is so small that the data are representative of the manufacturing establishments in Lower Saxony in 1994 and in the subsequent waves. The net sample of the first wave was used as the basis for the following waves.

The Hanover Panel was financed by the Volkswagen foundation. Interviews were conducted by Infratest Sozialforschung, a professional survey and opinion research institute. The data were collected on the basis of a questionnaire in personal interviews with the top manager of the establishment. The questionnaire covered various aspects of establishment structure, establishment behavior and establishment performance with an emphasis on issues relating to personnel. A nucleus of themes was addressed annually. Different additional topics were sampled in consecutive waves.

Information on profit sharing for employees is available from wave 1 (1994) and wave 3 (1996) of the survey. Wave 1 contains information on managers' attitudes toward profit sharing. Thus, managerial attitudes and objective establishment characteristics in 1994 are used to explain changes in the use of profit sharing between the years 1994 and 1996.

3.2 Profit Sharing for Employees

Table 1 shows the moves in the use of profit sharing for the years 1994 and 1996.[4] 8.3 percent of the establishments use profit sharing for employees in both years while 15.2 percent change their use in the relatively short period between 1994 and 1996. The

dropping and the introduction of profit sharing can be observed. 8.7 percent of all establishments use profit sharing only in 1994 and 6.5 percent only in 1996. Or put differently, about 8 percent of the establishment without profit sharing in 1994 introduced this payment schemes during the subsequent two years while roughly 51 percent of the establishments with profit sharing in 1994 dropped it. Thus, there is substantial experimentation in the use of profit sharing. This evidence accords with international experience that there is substantial churning in performance pay plans among employers (Brown and Heywood 2002).

3.3 Explanatory Variables

Table 2 presents the definitions and descriptive statistics of the explanatory variables. The explanatory variables are taken from wave 1 (1994) of the survey. Our key explanatory variables are two dummy variables for a positive and a very positive managerial attitude towards the incentive effects of profit sharing for employees.[5] The reference group consists of establishments with managers who have a negative or very negative attitude towards profit sharing. There are 11.1 percent of observations with a very positive managerial attitude and 46.8 percent with a positive managerial attitude.

The data set provides a rich set of control variables. The decision to adopt profit sharing for employees not only depends on managers' attitudes, but also on their incentives. Thus, the regressions include a dummy variable for managerial profit sharing. Moreover, a dummy for the presence of a works council takes into account that managers' decisions may be influenced by worker representation. Works councils

provide a highly developed mechanism for codetermination at the establishment level. Their creation depends on the initiative of the establishment's workforce.

Establishment size is taken into account by the number of employees. The establishment's investments in the employees' human capital are controlled for by a variable for per capita expenses on further training. The nature of production is captured by variables for the share of university graduates, a research-based strategy, a modern production technology and a participative organization of work. The literature on skill-biased technological and organizational change suggests that these variables reflect more multifaceted and complex tasks (Acemoglu 2002, Caroli and Van Reenen 2001, Hellmann and Thiele 2011, Jirjahn and Kraft 2011). A dummy for the use of shift work is also included. Shift work is often used in standardized large-scale production that involves less complex tasks (Jirjahn 2008).

In order to examine if profit sharing and alternative forms of performance pay are complements or substitutes, dummy variables for the use of individual-based and group-based performance pay are taken into account. Furthermore, variables for single establishment status, an expansive market strategy, the share of part-time employees and the share of temporary workers are included. Finally, 11 sector dummies capture technology differences across industries within manufacturing.

4. Estimation Results

4.1 Adoption of Profit Sharing

Table 3 provides the regression results for the adoption of profit sharing. The dependent variable is a dummy equal to 1 if the establishment has no profit sharing plan for

employees in the year 1994 and has such plan in the year 1996. It is equal to 0 if the establishment has no profit sharing plan for employees in both years. As the dependent variable is dichotomous, we fit the determinants of profit sharing adoption to a cumulative normal function using maximum likelihood probit estimation. In order to examine whether or not the pattern of results changes, we run regressions with three different specifications, a specification including only objective variables, a specification including only subjective variables, and a specification including both types of variables.

The specification of regression (1) only accounts for objective establishment characteristics. Several variables take significant coefficients (at the 10 percent level). The share of university graduates, a participative organization of work and a research-based strategy are positive determinants of profit sharing adoption. These findings fit the hypothesis that profit sharing is more likely to be adopted if the nature of production is to a larger degree characterized by multi-faceted tasks. The incidence of a works council is also positively associated with the adoption of profit sharing. The result conforms to the notion that the trust-building role of establishment-level codetermination fosters the implementation of profit sharing. The use of group-based performance pay is a negative determinant. This indicates that group-based and firm-wide incentives are substitutes. Finally, the share of part-time employees emerges as a positive covariate of profit sharing adoption.

In regression (2), only the two dummy variables for management's attitude towards profit sharing are included. The variable for a very positive managerial attitude takes a positive coefficient that is significant at the 5 percent level. The influence of this

variable is also economically meaningful. A very positive attitude towards profit sharing is associated with a 12 percentage point higher probability that profit sharing is adopted.

Regression (2) provides explorative evidence for the hypothesis that subjective factors play a role in the adoption of profit sharing. At issue is, whether this finding also holds in a regression that controls for objective establishment characteristics. Thus, in a further step, variables for managers' attitudes and variables for objective establishment characteristics are jointly included in regression (3). Controlling for objective establishment characteristics even strengthens the result that a very positive managerial attitude is associated with a higher probability of profit sharing adoption. The coefficient is now significant at the 1 percent level. Moreover, the estimated magnitude is higher than that in regression (2). A very positive managerial attitude towards profit sharing increases the probability of adoption by 14 percentage points. Thus, regression (3) provides no evidence that management's attitudes are simply a reflection of the objective circumstances of the establishment. Quite the contrary, management's attitudes appear to play their own important and strong role in the adoption of profit sharing.

Furthermore, comparing the results of regression (3) with those of regression (1), it can be seen that accounting for subjective factors improves the estimates for the objective establishment characteristics. The coefficients on works council incidence, direct worker participation, and the share of part-time employees are more precisely estimated. They are now significant at the 5 percent level. Moreover, the variables for establishment size and a modern production technology now emerge as significantly positive determinants of profit sharing adoption (at the 10 percent level).

4.2 Termination of Profit Sharing

Table 4 shows the probit estimates for the termination of profit sharing. The dependent variable is a dummy variable equal to 1 if the establishment has a profit sharing plan for employees in the year 1994 but not in the year 1996. It is equal to 0 if the establishment has a profit sharing plan for employees in both years.

Regression (1) only includes variables for objective establishment characteristics. The share of university graduates is a negative determinant of the termination of profit sharing. Thus, taken together, the results of Tables 3 and 4 suggest that a high share of university graduates not only leads establishments to adopt profit sharing but also to maintain this payment scheme once it has been implemented. Larger establishments are more likely to drop profit sharing. Thus, while larger establishments have a greater propensity to adopt profit sharing plans, they also have a greater probability to terminate existing plans. One explanation for this finding could be that larger firms tend to experiment with profit sharing more often and that this experimentation entails a higher number of less successful trials. Furthermore, the use of group-based performance pay is associated with a higher probability of dropping existing profit sharing plans. This can be seen as a further indication that group-based and firm-wide incentives are rather substitutes. Finally, employer provided further training is a negative determinant of the probability that profit sharing is terminated. The result fits the notion that employers tend to maintain profit sharing in order to safeguard the investments in the workers' human capital.

Regression (2) only includes the dummy variables for managerial attitudes. The regression shows that a very positive attitude is a significantly negative determinant of

terminating profit sharing for employees. Thus, taken together, our regressions provide evidence that managers' attitudes play a role in both the decision to adopt profit sharing and the decision to maintain profit sharing. A very positive managerial attitude not only increases the probability of adopting profit sharing, it also increases the probability of a sustained use of profit sharing.

The influence of management's attitude is also economically meaningful. A very positive attitude is associated with a 34 percentage point lower probability that profit sharing is terminated. Taking into account that the predicted probability of dropping profit sharing is about 65 percent in an establishment with no positive managerial attitudes, this implies a decrease by more than one half.

Regression (3) includes both subjective and objective variables. Again, the estimated magnitude of the influence of management's attitude increases when taking objective establishment characteristics into account. A very positive attitude towards profit sharing is now associated with a 49 percentage point lower probability that profit sharing for employees is terminated. Thus, also the regressions on profit sharing termination confirm that subjective factors play their own role. Controlling for objective establishment characteristics yields an even higher estimate of the influence of subjective factors.

Vice versa, the inclusion of the subjective variables also improves the estimates for the objective establishment characteristics. The coefficients on establishment size and group performance pay are now significant at the 5 percent level. Moreover, managerial profit sharing emerges as a significant determinant. If executive managers receive profit sharing, the establishment has a lower probability that profit sharing for employees is

dropped. This suggests that not only managers' attitudes but also their incentives play a role in maintaining profit sharing for employees.

4.3 Experimentation and Sustained Use

So far our analysis suggests that a very positive managerial attitude stimulates the adoption of profit sharing and contributes to a sustained use of profit sharing. We now expand the analysis to examine if positive managerial attitudes also entail failed experimentation with profit sharing. Thus, in order to obtain further insights into the dynamics of profit sharing use, we define a categorial dependent variable for each establishment *i*: 0 = *i* has no profit sharing plan for employees in 1994 and 1996; 1 = *i* has a profit sharing plan for employees only in 1994; 2 = *i* has a profit sharing plan for employees only in 1996; 3 = *i* has a profit sharing plan for employees in 1994 and 1996. Category 1 captures failed experimentation with profit sharing, category 2 the introduction of profit sharing, and category 3 a sustained use of profit sharing. The determinants of the various categories are estimated by using a multinomial probit model. For the interpretation of the estimates, it is important to note that the reference group for each of the three categories now uniformly consists of establishments without profit sharing in both years (1994 and 1996).

Table 5 provides the results. A very positive managerial attitude in the year 1994 is associated with a higher probability of the introduction of profit sharing in the period from 1994 to 1996. This result corresponds to the finding shown in Table 3. Furthermore, a positive and a very positive managerial attitude in 1994 are associated with a higher probability that profit sharing is used in both years 1994 and 1996. This result points into

same directions as the finding of Table 4. Positive managerial attitudes towards profit sharing can contribute to a sustained use of this payment scheme.

Finally, a positive and a very positive managerial attitude in the year 1994 are associated with an increased likelihood that the establishment has profit sharing for employees only in 1994 but not in 1996. This novel result shows the role of positive managerial attitudes in a more differentiated light. It indicates that positive managerial attitudes to some extent also entail the adoption of profit sharing plans which turn out to be a failure. In 1994, management holds a positive view about a profit sharing plan adopted in the previous years. Nonetheless the plan is dropped in the subsequent two years. As suggested by our background discussion, management may initially have a positive view towards profit sharing even though this view does not necessarily match the objective circumstances of the establishment. In that case, management adopts profit sharing for employees and recognizes later on that this payment scheme is not that successful as expected. This leads management to drop it.

Altogether, our estimates suggest the following pattern of dynamics: Positive managerial attitudes translate into a higher likelihood of initiating profit sharing. On the one hand, profit sharing plans are implemented that are used in a sustained matter. On the other hand, profit sharing plans are adopted that prove to be a failure and so are dropped in the end. The marginal effects show that both scenarios are economically meaningful. A very positive managerial attitude is associated with a 20 percentage point higher probability of sustained use and 7 percentage point higher probability of failed experimentation. For a positive managerial attitude, the respective numbers are 4 and 6 percentage points.

5. Conclusions

From a theoretical viewpoint, discretionary power in decision making leaves room for managers to follow their subjective attitudes towards profit sharing. These attitudes can differ for several reasons. Depending on their experience and education, managers may differ in their knowledge of the potential advantages and disadvantages of profit sharing. Taking into account that also scientific insights into the effects of profit sharing are incomplete and fragmentary, there appears to be ample room for subjective interpretation. Moreover, even if complete knowledge of the possible effects of profit sharing was available, managers may still lack the necessary information about local conditions at lower levels of hierarchy. These local conditions can have a crucial influence on whether or not profit sharing is a suitable incentive scheme. Hence, even if managers had complete knowledge of the possible effects of profit sharing, they would have not enough information to predict the concrete functioning of profit sharing under the specific conditions of their firm. Incomplete information about local conditions implies that managers' subjective opinions on the suitability of profit sharing inevitably enter the decision to adopt this payment scheme.

Thus, managers' subjective attitudes should play their own role in the adoption of profit sharing. On the one hand, there can be cases in which the attitudes do not match the objective situation of the firm. Managers with positive attitudes may adopt profit sharing even though the firm's objective situation may not lead to positive effects of this payment scheme. In this case, in the end, profit sharing proves to be a failure. On the other hand, the effects of profit sharing may not only depend on the firm's objective circumstances,

but also on managers' attitudes themselves. To the extent positive effects of profit sharing require a supportive managerial environment, managerial attitudes can be self-fulfilling. Managers with positive attitudes are more likely to take complementary measures that strengthen positive effects of profit sharing. In that case, positive managerial attitudes not only involve a higher propensity of introducing profit sharing, but also a higher tendency to use this payment scheme in a sustained matter.

Our empirical results conform to the theoretical expectations. The empirical analysis reveals a strong role of positive managerial attitudes in the introduction of profit sharing. While to some extent this reflects failed experimentation, positive managerial attitudes substantially also contribute to a sustained use of profit sharing. The pattern of results holds even when controlling for a variety of objective firm characteristics. This underscores that managers' attitudes are more than just a reflection of the firm's objective circumstances.

The results also have policy implications. Providing more information about the potential advantages and disadvantages of profit sharing can contribute to more rational managerial attitudes towards profit sharing. On the one hand, better knowledge of the functioning of profit sharing may reduce failed experimentation. Better information about the limitations of profit sharing can prevent managers from adopting profit sharing in situations that do not involve positive effects of this payment scheme. Of course, providing better information is not likely to completely eliminate failed experimentation as even scientific knowledge is fragmentary and managers still face to problem of incomplete information about the idiosyncratic local conditions within the firm. Nonetheless to some extent it may help avoid the cost of an unsuccessful adoption of

profit sharing. On the other hand, better knowledge of the functioning of profit sharing can stimulate successful adoptions of profit as it helps overcome negative attitudes of managers in situations that involve positive effects of this payment scheme. In particular, providing more information may help managers recognize that the success of profit sharing depends on the complementary steps they must take to strengthen positive incentive effects.

We end this paper with suggestions for future research. While this study has analyzed the role of managerial attitudes in the adoption of profit sharing, it would be interesting to empirically examine if managerial attitudes have also an influence on the effects of profit sharing. Previous research has provided considerable evidence of positive effects of profit sharing on firm performance (see Perotin and Robinson 2003 for a survey). Our considerations suggest that the managerial environment may play a crucial moderating role in the effects of profit sharing. Future research could fruitfully examine this moderating role in more detail.

References

Acemoglu, Daron. 2002. "Technical Change, Inequality and the Labor Market," *Journal of Economic Literature* 40: 7 – 72.

Adams, Christopher P. 2006. "Optimal Team Incentives with CES Production." *Economics Letters* 92: 143 – 48.

Amisano, Gianni and Alessandra Del Boca. 2004. "Profit Related Pay in Italy: A Microeconometric Analysis," *International Journal of Manpower* 25: 463 – 478.

Baker, George. 2002. "Distortion and Risk in Optimal Incentive Contracts." *Journal of Human Resources*, Vol. 37, pp. 728-51.

Bamber, Linda S., John X. Jiang and Isabel Y. Wang. 2010. "What's My Style? The Influence of Top Managers on Voluntary Corporate Financial Disclosure," *Accounting Review* 85:1131 – 1162.

Barnes, C., J. Hollenbeck, D. Jundt, D. DeRue and S. Harmon. 2011. "Mixing Individual Incentives and Group Incentives: Best of Both Worlds or Social Dilemma?" *Journal of Management* 37: 1611 – 1635.

Bayo-Moriones, Alberto and Emilio Herta-Arribas. 2002. "Organisational Incentive Plans in Spanish Manufacturing Industry," *Personnel Review* 31: 128 – 142.

Bertrand, Marianne and Antoinette Schoar. 2003. "Managing with Style: The Effect of Managers on Firm Policies," *Quarterly Journal of Economics* 118: 1169 – 1208.

Blasi, Joseph R., Richard B. Freeman and Douglas L. Kruse. 2016. "Do Broad-based Employee Ownership, Profit Sharing and Stock Options Help the Best Firms Do Even Better?" *British Journal of Industrial Relations* 54: 55 – 82.

Bloom, Nicholas, Benn Eifert, Aprajit Mahajan, David McKenzie and John Roberts. 2013. "Does Management Matter? Evidence from India," *Quarterly Journal of Economics* 128: 1 – 51.

Boone, J. 2000. "Competitive Pressure: the Effects on Investments in Product and Process Innovation," *RAND Journal of Economics* 31: 549 – 569.

Brown, Michelle and John S. Heywood. 2002. "Paying for Performance: What Has Been Learned?" in Michelle Brown and John S. Heywood, eds., *Paying for Performance: An International Comparison*. M.E. Sharpe, New York: 261 – 275.

Budd, John W. 2010. "Does Employee Ignorance Undermine Shared Capitalism?" in Douglas L. Kruse, Richard B. Freeman and Joseph R. Blasi, eds., *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-Based Stock Options*. University of Chicago Press, Chicago: 291 – 316.

Caroli, Eve and John van Reenen. 2001. "Skill-Biased Organizational Change? Evidence from a Panel of British and French Establishments," *Quarterly Journal of Economics* 116: 1449 – 1492.

Carpenter, Jeffrey, Samuel Bowles, Herbert Gintis and Sung-Ha Hwang. 2009. "Strong Reciprocity and Team Production: Theory and Evidence," *Journal of Economic Behavior and Organization* 71: 221 – 232.

Che, Y.K. and S.W. Yoo. 2001. "Optimal Incentives for Teams." *American Economic Review*, Vol. 91, pp. 525-541.

Cheadle, A. 1989. "Explaining Patterns of Profit Sharing Activity," *Industrial Relations* 28: 387 – 400.

Cheatham, C., D. Davis and L. Cheatham. 1996. "Hollywood Profits: Gone with the Wind?" *CPA Journal:* 32-34.

Cornelissen, Thomas, John S. Heywood and Uwe Jirjahn. 2014. "Reciprocity and Profit Sharing: Is There an Inverse U-shaped Relationship?" *Journal of Labor Research* 35: 205 – 225.

Drago, Robert and John S. Heywood. 1995. "Choice of Payment Schemes: Australian Establishment Data," *Industrial Relations* 34: 507 – 31.

Drago, Robert and Geoffrey K. Turnbull. 1988. "Individual versus Group Piece Rates under Team Technologies," *Journal of the Japanese and International Economies* 2: 1 – 10.

Drago, Robert and Geoffrey K. Turnbull. 1991. "Market Incentives and Work Incentives: The Question of Flexible Production." *International Economic Review*, Vol. 32, pp. 77-83.

FitzRoy, Felix and Kornelius Kraft. 1987. "Cooperation, Productivity and Profit Sharing," *Quarterly Journal of Economics* 102: 23 – 36.

Freeman, Richard B., Joseph R. Blasi and Douglas L. Kruse. 2010a. "Introduction," in Douglas L. Kruse, Richard B. Freeman and Joseph R. Blasi, eds., *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-Based Stock Options*. University of Chicago Press, Chicago: 1 – 37.

Freeman, Richard B., Douglas L. Kruse and Joseph R. Blasi. 2010b. "Worker Responses to Shirking under Shared Capitalism," in Douglas L. Kruse, Richard B. Freeman and Joseph R. Blasi, eds., *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-Based Stock Options*. University of Chicago Press, Chicago: 77 – 103.

Frege, Carola M. 2002. "A Critical Assessment of the Theoretical and Empirical Research on German Works Councils," *British Journal of Industrial Relations* 40: 221 – 248.

Graham, John R., Campbell R. Harvey and Manju Puri. 2013. "Managerial Attitudes and Corporate Actions," *Journal of Financial Economics* 109: 103 – 121.

Gerlach, Knut, Olaf Huebler and Wolfgang Meyer. 2003. "The Hannover Firm Panel (HFP)," *Journal of Applied Social Science Studies* 123: 463–470.

Green, Colin P. and John S. Heywood. 2011. "Profit Sharing, Separation and Training," *British Journal of Industrial Relations* 49: 623 – 642.

Gregg, P.A. and S.J. Machin. 1988. "Unions and the Incidence of Performance Linked Pay

Schemes in Britain," *International Journal of Industrial Organization* 6: 91 –107.

Guery, Loris and Andrew Pendleton. 2014. "Do Investments in Human Capital Lead to Employee Share Ownership? Evidence from French Establishments," *Economic and Industrial Democracy*, Forthcoming.

Hellmann, Thomas and Veikko Thiele. 2011. "Incentives and Innovation: A Multitasking Approach," *American Economic Journal: Microeconomics* 3: 78 – 128.

Heywood, John S., Olaf Huebler and Uwe Jirjahn. 1998. "Variable Payment Schemes and Industrial Relations: Evidence from Germany," *Kyklos* 51: 237 – 257.

Heywood, John S. and Uwe Jirjahn. 2002. "Payment Schemes and Gender in Germany," *Industrial and Labor Relations Review* 56: 44 – 64.

Heywood, John S. and Uwe Jirjahn. 2006. "Performance Pay: Determinants and Consequences," in D. Lewin, ed., *Contemporary Issues in Industrial Relations*. Labor and Employment Relations Association, Champaign IL: 149 – 188.

Heywood, John S. and Uwe Jirjahn. 2009. "Profit Sharing and Firm Size: The Role of Team Production," *Journal of Economic Behavior and Organization* 71: 246 – 258.

Heywood, John S. and Uwe Jirjahn. 2014. "Variable Pay, Industrial Relations and Foreign Ownership: Evidence from Germany," *British Journal of Industrial Relations* 52: 521 – 552.

Holmstrom, Bengt and Paul Milgrom. 1991. "Multitask Principal Agent Analyses: Incentive Contracts, Asset Ownership and Job Design." *Journal of Law, Economics, & Organization* 7: 24 – 52.

Jirjahn, Uwe. 1998. *Effizienzwirkungen von Erfolgsbeteiligung und Partizipation – Eine mikroökonomische Analyse*. Campus.

Jirjahn, Uwe. 2000. "Incentives for Multitasking: Fixed Wages or Profit Sharing?" *Economic Analysis* 3: 137 – 148.

Jirjahn, Uwe. 2002. "The German Experience with Performance Pay," in: Michelle Brown and John S. Heywood, eds., *Paying for Performance: An International Comparison*. M.E. Sharpe, New York: 148 – 178.

Jirjahn, Uwe. 2008. "On the Determinants of Shift Work and Overtime Work: Evidence from German Establishment Data," *British Journal of Industrial Relations* 46: 133 – 168.

Jirjahn, Uwe and Kornelius Kraft. 2011. "Do Spillovers Stimulate Incremental or Drastic Product Innovations? Evidence from German Establishment Data," *Oxford Bulletin of Economics and Statistics* 73: 509 – 538.

Jirjahn, Uwe and Erik Poutsma. 2013. "The Use of Performance Appraisal Systems: Evidence from Dutch Establishment Data," *Industrial Relations* 52: 801 – 821.

Jirjahn, Uwe and Stephen C. Smith. 2006. "What Factors Lead to Management to Support or

Oppose Employee Participation – with and without Works Councils? Hypotheses and Evidence from Germany," *Industrial Relations* 45: 650 – 680.

Jones, Derek C., Panu Kalmi, Takao Kato and Mikko Mäkinen. 2012. "Financial Participation in Finland: Incidence and Determinants," *International Journal of Human Resource Management* 23: 1570 – 1589.

Jones, Derek C. and Tako Kato. 2012. "Incidence, Coverage and Employee Knowledge of Participation in Financial Incentive Schemes: Evidence from US Cases," *International Journal of Human Resource Management* 23: 1547 – 1569.

Jones, Derek C. and Jeffrey Pliskin. 1997. "Determinants of the Incidence of Group Incentives: Evidence from Canada," *Canadian Journal of Economics* 30: 1027 – 1045.

Kalmi, Panu, Andrew Pendleton and Erik Poutsma. 2012. "Bargaining Regimes, Variable Pay and Financial Participation: Some Survey Evidence on Pay Determination," *International Journal of Human Resource Management* 23: 1643 – 1659.

Kandel, Eugene and Edward Lazear. 1992."Peer Pressure and Partnerships," *Journal of Political Economy* 100: 801 – 17.

Kaplan, Steven N., Mark M. Klebanov and Morten Sorensen. 2012. "Which CEO Characteristics and Abilities Matter?" *Journal of Finance* 67: 973 – 1007.

Knez, Marc and Duncan Simester. 2001. "Firm-Wide Incentives and Mutual Monitoring at Continental Airlines," *Journal of Labor Economics* 19: 743 – 72.

Kruse, Douglas L. 1993. *Profit Sharing. Does It Make a Difference?*, Upjohn Institute for Employment Research, Kalamazoo, MI.

Kruse, Douglas L. 1996. "Why Do Firms Adopt Profit Sharing and Employee Ownership Plans?" *British Journal of Industrial Relations* 34: 515 – 38.

Kurtulus, Fidan A., Douglas L. Kruse and Joseph R. Blasi. 2011. "Worker Attitudes towards Employee Ownership, Profit Sharing and Variable Pay," *Advances in the Economic Analysis of Participatory and Labor-Managed Firms* 12: 143 – 168.

Long, Richard J. 1997. "Motives for Profit Sharing: A Study of Canadian Chief Executive Officers," *Relations Industrielles / Industrial Relations* 52: 712 – 733.

Long, Richard J. and Tony Fang. 2015. "Do Strategic Factors Affect Adoption of Profit Sharing? Longitudinal Evidence from Canada," *International Journal of Human Resource Management* 26: 971 – 1001.

Long, Richard J. and John L. Shields. 2005. "Performance Pay in Canadian and Australian Firms: A Comparative Study," *International Journal of Human Resource Management* 16: 1783 – 1811.

MacLeod, Bentley. 1988. "Equity, Efficiency, and Incentives in Cooperative Teams," *Advances in the Economic Analysis of Participatory and Labor-Managed Firms* 3: 5 – 23.

Malmendier, Ulrike and Geoffrey Tate. 2005. “CEO Overconfidence and Corporate Investment,” *Journal of Finance* 60: 2661 – 2700.

Murphy, Kevin J. 1999. “Executive Compensation,” in Orley Ashenfelter and David Card, eds., *Handbook of Labor Economics* Vol. 3, Part B, Elsevier, North Holland: 2485 – 2563.

Murphy, Kevin J. 2013. “Executive Compensation: Where We Are and How We Got There,” in George Constantinides, Milton Harris and Rene Stulz, eds., *Handbook of the Economics of Finance*, Elsevier, North Holland: 211 – 356.

OECD. 1995. *OECD Employment Outlook 1995*. Paris.

Oyer, Paul. 2004. “Why Do Firms Use Incentives that Have No Incentive Effects?” *Journal of Finance* 59: 1619 – 49.

Perotin, Virginie and Andrew Robinson. 2003. “Employee Participation in Profit and Ownership: A Review of the Issues and the Evidence,” Luxembourg, European Parliament.

Pendleton, Andrew 1997. “Characteristics of Workplaces with Financial Participation: Evidence from the Workplace Industrial Relations Survey,” *Industrial Relations Journal* 28: 103 – 119.

Pendleton, Andrew. 2006. “Incentives, Monitoring, and Employee Stock Ownership Plans: New Evidence and Interpretations,” *Industrial Relations* 45: 753 – 777.

Pendleton, Andrew and Andrew Robinson. 2015. “The Productivity Effects of Multiple Pay Incentives,” *Economic and Industrial Democracy*, Forthcoming.

Poutsma, Erik, Paul Ligthart, Andrew Pendleton and Chris Brewster. 2013. “The Development of Employee Financial Participation in Europe,” in Emma Parry, Eleni Stavrou and Mila Lazarova, eds., *Global Trends in Human Resource Management*. Palgrave Macmillan: 179 – 213.

Poutsma, Erik and Willem de Nijs. 2003. “Broad-Based Employee Financial Participation in the European Union,” *International Journal of Human Resource Management* 14: 863 – 892.

Poutsma, Erik, Willem de Nijs and Hans Doorewaard. 1999. “Promotion of Employee Ownership and Profit Sharing in Europe,” *Economic and Industrial Democracy* 20: 171 – 196.

Robinson, Andrew M. and Hao Zhang. 2005. “Employee Share Ownership: Safeguarding Investments in Human Capital,” *British Journal of Industrial Relations* 43: 469 – 488.

Rotemberg, Julio. 1994. “Human Relations in the Workplace,” *Journal of Political Economy* 102: 685 – 717.

Schmidt, K. M. 1997. “Managerial Incentives and Product Market Competition,” *Review of Economic Studies* 64: 191 – 213.

Sweins, C. and P. Kalmi. 2008. “Pay Knowledge, Pay Satisfaction and Employee Commitment: Evidence from Finnish Profit Sharing Schemes,” *Human Resource Management Journal* 18: 366 – 385.

Ugarkovic, Marija. 2007. *Profit Sharing and Company Performance.* Gabler Edition Wissenschaft, Wiesbaden.

Wageman, R. 1995. "Interdependence and Group Effectiveness," *Administrative Science Quarterly* 40: 145 – 180.

Weitzman, Martin L. 1984. *The Share Economy*. Harvard University Press, Cambridge, MA.

Winship, Christopher and Larry Radbill. 1994. "Sampling Weights and Regression Analysis," *Sociological Methods and Research* 23: 230 – 257.

Table 1: Movements in the Use of Profit Sharing

Use of Profit Sharing	*Share of Establishments (in %)*
No use in 1994 and 1996	76.54
Use only in 1994	8.65
Use only in 1996	6.49
Use in 1994 and 1996	8.32

N = 601

Table 2: Definitions and Descriptive Statistics of the Explanatory Variables

Variable	*Definition*	*Mean*
Very positive attitude towards profit sharing	Dummy equals 1 if management regards profit sharing as very well suited to motivate employees.	0.1115
Positive attitude towards profit sharing	Dummy equals 1 if management regards profit sharing as well suited to motivate employees.	0.4676
Establishment size	Number of employees.	155.1
Part-time workers	Part-time workers as a proportion of all employees.	0.0867
Temporary workers	Temporary workers as a proportion of all employees.	0.0274
University graduates	University graduates as a proportion of all employees.	0.0322
Executive profit sharing	Dummy equals 1 if the executive managers have a profit sharing plan.	0.4223
Single establishment	Dummy equals 1 if the establishment has no subsidiaries and is not itself a subsidiary.	0.6040
Research	Dummy equals 1 if strengthening research and development is at the heart of the establishment's strategy.	0.1631
Expansive strategy	Dummy equals 1 if management plans to increase the market share of the establishment.	0.5474
Works council	Dummy equals 1 if the establishment has a works council.	0.5574
Direct worker participation	Ordered variable for direct worker participation (0 = workers are not organized in production teams and do not participate in investment decisions, 1 = workers are organized in production teams or participate in investment decisions, 2 = workers are organized in production teams and participate in investment decisions.	1.2662
Further training	Expenditures on employer provided further training (in German marks) divided by total employees.	188.75
Technology at the newest level	Dummy equals 1 if the establishment's production technology is of the most recent vintage.	0.3527
Shift work	Dummy equals 1 if the establishment uses shift work.	0.4043
Individual-based performance pay	Dummy equals 1 if the establishment uses individual performance pay as an incentive scheme.	0.2429
Group-based performance pay	Dummy equals 1 if the establishment uses group performance pay as an incentive scheme.	0.0948
Industry dummies	Eleven dummies for industrial sectors in manufacturing.	-----

N = 601. All explanatory variables are taken from wave 1 (1994) of the survey.

Table 3: Determinants of the Introduction of Profit Sharing

Explanatory Variables	*(1)*	*(2)*	*(3)*
Very positive attitude towards profit sharing	-----	0.5714 [0.119] (2.24)**	0.7885 [0.144] (2.69)***
Positive attitude towards profit sharing	-----	-0.1364 [-0.018] (0.75)	-0.2424 [-0.020] (1.25)
Establishment size	0.0008 [0.0001] (1.53)	-----	0.0008 [0.0001] (1.68)*
Part-time workers	1.4658 [0.155] (1.92)*	-----	1.7029 [0.160] (2.22)**
Temporary workers	-0.0172 [-0.002] (0.01)	-----	-0.1748 [-0.016] (0.14)
University graduates	2.7878 [0.294] (1.88)*	-----	2.6925 [0.253] (1.81)*
Executive profit sharing	0.1933 [0.021] (1.03)	-----	0.1824 [0.018] (0.94)
Single establishment	0.2112 [0.021] (1.04)	-----	0.1968 [0.018] (0.97)
Research	0.3931 [0.052] (1.83)*	-----	0.4319 [0.053] (1.94)*
Expansive strategy	-0.1053 [-0.011] (0.58)	-----	-0.1777 [-0.017] (0.97)
Works council	0.4388 [0.046] (1.90)*	-----	0.5137 [0.048] (2.22)**
Direct worker participation	0.2362 [0.025] (1.81)*	-----	0.2723 [0.026] (2.08)**
Further training	-0.0001 [-0.00001] (0.46)	-----	-0.0002 [-0.00002] (0.75)
Technology at the newest level	0.2673 [0.030] (1.45)	-----	0.3474 [0.036] (1.85)*
Shift work	-0.0768 [-0.008] (0.32)	-----	-0.1564 [-0.014] (0.61)
Individual-based performance pay	-0.1060 [-0.011] (0.48)	-----	-0.0731 [-0.007] (0.33)
Group-based performance pay	-0.5906 [-0.042] (1.79)*	-----	-0.6044 [-0.038] (1.72)*
Constant	-2.8433 (5.48)***	-1.4306 (11.86)***	-2.8571 (5.44)***
Industry dummies	Included	Not included	Included
Pseudo R^2	0.1357	0.0255	0.1764
Number of observations	499	499	499

The dependent dummy variable is equal to 1 if the establishment has no profit sharing for employees in 1994 and has profit sharing for employees in 1996. It is equal to 0 if the establishment has no profit sharing for employees in both years. Method: Probit. The table shows the estimated coefficients. T-statistics are in parentheses and marginal effects in square brackets. Marginal effects of dummy variables are evaluated for a discrete change from 0 to 1. Marginal effects of the dummies for managerial attitudes are changes in probability compared to the reference group with a negative or very negative attitude. Marginal effects of variables other than the dummy variables are evaluated at the mean values. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Table 4: Determinants of the Termination of Profit Sharing

Explanatory Variables	*(1)*	*(2)*	*(3)*
Very positive attitude towards profit sharing	-----	-0.8798 [-0.339] (2.16)**	-1.3344 [-0.486] (2.46)**
Positive attitude towards profit sharing	-----	-0.2281 [-0.088] (0.64)	-0.1907 [-0.071] (0.43)
Establishment size	0.0009 [0.0004] (1.93)*	-----	0.0009 [0.0004] (1.97)**
Part-time workers	-1.3233 [-0.528] (1.01)	-----	-1.9972 [-0.797] (1.50)
Temporary workers	-0.4277 [-0.171] (0.24)	-----	0.3848 [0.153] (0.21)
University graduates	-9.6796 [-3.861] (2.04)**	-----	-10.8343 [-4.322] (2.19)**
Executive profit sharing	-0.5394 [-0.210] (1.51)	-----	-0.7623 [-0.291] (2.17)**
Single establishment	-0.0398 [-0.016] (0.12)	-----	-0.0974 [-0.039] (0.29)
Research	0.0252 [0.010] (0.07)	-----	0.1243 [0.049] (0.33)
Expansive strategy	-0.2043 [-0.081] (0.61)	-----	-0.3038 [-0.121] (0.85)
Works council	0.2491 [0.099] (0.67)	-----	0.4585 [0.181] (1.23)
Direct worker participation	-0.1215 [-0.048] (0.55)	-----	-0.2230 [-0.092] (0.95)
Further training	-0.0008 [-0.0003] (3.07)***	-----	-0.0007 [-0.0003] (2.46)**
Technology at the newest level	-0.1898 [-0.076] (0.59)	-----	-0.0036 [-0.001] (0.01)
Shift work	0.1910 [0.076] (0.57)		-0.1908 [-0.076] (0.55)
Individual-based performance pay	-0.2162 [-0.086] (0.64)	-----	-0.2602 [-0.103] (0.74)
Group-based performance pay	0.9233 [0.335] (1.81)*	-----	1.2494 [0.423] (2.15)**
Constant	0.1979 (0.19)	0.3374 (1.20)	0.9999 (0.92)
Industry dummies	Included	Not included	Included
Pseudo R^2	0.2163	0.0441	0.2747
Number of observations	102	102	102

The dependent dummy variable is equal to 1 if the establishment has profit sharing for employees in 1994 and has no profit sharing for employees in 1996. It is equal to 0 if the establishment has profit sharing for employees in both years. Method: Probit. The table shows the estimated coefficients. T-statistics are in parentheses and marginal effects in square brackets. Marginal effects of dummy variables are evaluated for a discrete change from 0 to 1. Marginal effects of the dummies for managerial attitudes are changes in probability compared to the reference group with a negative or very negative attitude. Marginal effects of variables other than the dummy variables are evaluated at the mean values. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Table 5: Determinants of Experimentation and Sustained Use

Explanatory Variables	*Profit Sharing only in 1994*	*Profit Sharing only in 1996*	*Profit Sharing in 1994 and 1996*
Very positive attitude towards profit sharing	1.1833 [0.065] (3.55)***	1.0397 [0.074] (3.06)***	2.1263 [0.199] (5.84)***
Positive attitude towards profit sharing	0.7017 [0.056] (2.81)***	-0.2256 [-0.026] (0.92)	0.8298 [0.040] (2.88)***
Establishment size	0.0010 [0.0001] (2.76)***	0.0007 [0.00004] (1.67)*	0.0007 [0.00003] (1.91)*
Part-time workers	1.7851 [0.122] (1.76)*	2.1976 [0.140] (2.52)**	2.3436 [0.122] (2.62)***
Temporary workers	0.8049 [0.068] (0.55)	-0.0804 [-0.021] (0.05)	0.8312 [0.048] (0.61)
University graduates	-4.2203 [-0.432] (1.07)	3.2657 [0.299] (1.67)*	0.8944 [0.070] (0.42)
Executive profit sharing	1.2111 [0.092] (4.60)***	0.3637 [0.004] (1.54)	1.4959 [0.103] (5.68)***
Single establishment	-0.7110 [-0.069] (3.02)***	0.1726 [0.024] (0.67)	-0.4856 [-0.028] (1.93)*
Research	0.2867 [0.018] (1.03)	0.4681 [0.037] (1.69)*	0.4064 [0.023] (1.37)
Expansive strategy	0.1486 [0.011] (0.66)	-0.0777 [-0.010] (0.34)	0.3587 [0.022] (1.44)
Works council	0.1071 [0.003] (0.40)	0.6318 [0.048] (2.21)**	-0.0049 [-0.006] (0.02)
Direct worker participation	0.0689 [0.002] (0.44)	0.3412 [0.026] (2.01)**	0.1376 [0.006] (0.96)
Further training	-0.0001 [-0.00001] (0.46)	-0.0003 [-.00003] (1.00)	0.0002 [0.00001] (0.78)
Technology at the newest level	0.1832 [0.009] (0.83)	0.4419 [0.033] (1.85)*	0.3260 [0.017] (1.39)
Shift work	-0.3825 [-0.029] (1.40)	-0.1230 [-0.002] (0.42)	-0.4801 [-0.026] (1.71)*
Individual-based performance pay	0.2391 [0.021] (0.88)	-0.0366 [-0.007] (0.13)	0.2852 [0.018] (1.04)
Group-based performance pay	0.0410 [0.017] (0.15)	-0.7327 [-0.038] (1.55)	-0.9499 [-0.036] (2.10)**
Constant	-3.4150 (4.86)***	-3.7289 (6.05)***	-4.2349 (6.61)***
Industry dummies	Included		
Log likelihood	-377.74		
Number of observations	601		

The reference group consists of establishments without profit sharing in the years 1994 and 1996. Method: Multinomial Probit. The table shows the estimated coefficients. T-statistics are in parentheses and marginal effects in square brackets. Marginal effects of dummy variables are evaluated for a discrete change from 0 to 1. Marginal effects of the dummies for managerial attitudes are changes in probability compared to the reference group with a negative or very negative attitude. Marginal effects of variables other than the dummy variables are evaluated at the mean values. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Endnotes

[1] See, e.g., Amisano and Del Boca (2004), Bayo-Moriones and Huerta-Arribas (2002), Cheadle (1989), Drago and Heywood (1995), FitzRoy and Kraft (1987), Gregg and Machin (1988), Heywood et al. (1998), Heywood and Jirjahn (2002, 2009, 2014), Jones et al. (2012), Jirjahn (1998), Jones and Pliskin (1997), Kalmi et al. (2012), Kruse (1993, 1996), Long and Fang (2015), Long and Shields (2005), Pendleton (1997), Poutsma et al. (2013), Poutsma and de Nijs (2003), and Ugarkovic (2007).

[2] Evidence from the US movie industry suggests that such distrust may be justified (Cheatham et al. 1996). If actors' pay is based on the net profits of a film, the movie company can reduce cost by "creative accounting".

[3] One might wonder if such differences in knowledge might be rather a short-run phenomenon. In the long run, competition may force firms to exit if they are run by less informed managers. However, theoretical models suggest that the influence of competition on the productive efficiency of firms is ambiguous (Boone 2000, Schmidt 1997). Bloom et al. (2013) provide supporting evidence that firms can survive even if managers lack basic knowledge of standard management practices.

[4] Descriptive statistics and the multivariate analysis are not weighted. The sampling weights available in the data set only correct for stratification by establishment size. Thus, using the weights in multivariate regressions will probably result in biased estimates. A more appropriate method is to control for the two stratification characteristics firm size and industry in the regressions (Winship and Radbill 1994). To relate descriptive statistics to regression results, they are also not weighted.

[5] The questionnaire asks the interviewees to express their views towards profit sharing as a measure to increase employee motivation over the long-term. Interviewees respond on a four-

point Likert scale ranging from 1 “not suitable at all” to 4 “very suitable”. The dummy variables are created from this scale.